Test oil: ISO 4113 od SAE J967d

2-5

Magnet

ZEXEL - Test values

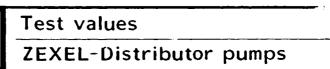
Distributor pumps Engine: NEW HA

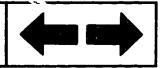
BOSCH no. 9 460 610 295 DKKC no. 104740-0097 Date: 15.4.1988 (0) Company: MAZDA

Injection numb no 104640	0006	(110 1/54/10	<b>53.444.</b>		Company: MAZDA
<u>Injection pump no. 104640-</u> Direction of rotation: rea		(NP-VE4/10	F1900RNP51)		No: SE01 13 800E
Prestroke setting: 0.1	R = 0 22 mm		o holden oambinatian a soo o	•• •••	
1. Setting val	11 A C	Speed	e holder combination: 1 688 90		ressure line: 1 680 750 017
To occurring var	0 6 3	min-1	Setting values	Charge - air	Difference
1-1  Timing device travel	<del></del>		5.0	<u> pressure - ba</u>	r (mmHg) (cc)
1-2 Feed pump pressure		1500	5.8 - 6.2 (mm)		
1-3 Full load delivery w	ithout champs	1500	5.7 - 6.3 (kg/cm <sup>2</sup> )	ļ	
air pressure	rthout tharge-	1000	52.1 54.3 4 4555		
	ibh abawaa siw	1000	53.1 - 54.1 (cc/1000 strokes	5)	3.5
Full load delivery w	ith charge-air				
		200	(cc/1000 strokes		
The state of the s	ation	300	10.8 - 14.8 (cc/1000 strokes		2.5
	1.9	100	over 78.0 (cc/1000 strokes		
1	tion	2100	19.1 - 25.1 (cc/1000 strokes	3)	
1-7 Load-dependent start	of delivery				
2. Test values 2-1 Timing device	1	-		·	
2-1 Timing device	N = min	1			
2 2 Food num	<del></del>	mm 2.4 -			
2-2 Feed pump	N = min	<b>A</b>   • • • • •	,,,,,	3. Dime	nsions
2 2 Overflow make			2.9 5.7 - 6.3 7.1 - 7.7		
2-3 Overflow rate	N = min	1			
2 A Dolivery water	cc/	10s   5.3 -	97.0	K	3.2 - 3.4 mm
2-4 Delivery rates	1.0			KF	5.7 - 5.9 mm
Control lever position		ivery rate	Charge-air pressure Differer	nce MS	1.7 - 1.9 mm
End ston	min-1 (cc/	/1000 strokes	) bar (mmHg) (cc)	LDA	
End stop		5 - 54.6		Angle o	f control lever
		5 - 49.6		α	18.0 - 22.0 angle
		3 - 54.3		A	5.7 - 8.3 mm
		1 - 25.1		B	35.0 - 45.0 angle
Churt CC		low 6		B	11.2 - 14.5 mm
Shut-off	300	0		Y	- angle
Idle stop		3 - 14.8			mm
	below 570	0			

Test values	
ZEXEL-Distributor pumps	

Cut-in voltage max. 16 V Test voltage 24 - 26 V





Test oil: ISO 4113 od SAE J967d

ZEXEL - Test values

Distributor pumps

Engine: XA

BOSCH no. 9 460 610 293 DKKC no. 104740-0153 Date: 15.4.1988 (0)

Company: MAZDA
No: 4827 13 800B

Injection pump no. 104640-0153

(NP-VE4/8F1300RNP130)

Tillie Toll pump 110. Tatala			<u> </u>	NO	4027 13 000D
Direction of rotation: rear end si	de clockwise				
Prestroke setting: - mm	T(	est-nozzl	e holder combination: 1 688 901	000 Test pressure	line: 1 680 750 017
1. Setting values		Speed			Difference
<b>3</b>	Į.	min-l	l cotting values	pressure - bar (mmHq)	•
1-1  Timing device travel		1000	2,3 - 2,7 (mm)	37	
1-2   Feed pump pressure		1000	4,0 - 4,6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without o	harge-		1,0 1,0 (1.9,0111)		
air pressure		1000	44,3 - 45,3 (cc/1000 strokes)		3, 0
Full load delivery with char	ge-air		11,5 15,5 (55,1555 56,685)		3,0
pressure			(cc/1000 strokes)		
1-4 Low-idle speed regulation	j	350	4,2 - 8,2 (cc/1000 strokes)		2,0
1-5   Start		100	over 78,0 (cc/1000 strokes)	1	
1-6 Maximum speed regulation		1380	12,1 - 18,1 (cc/1000 strokes)	i e	
1-7 Load-dependent start of deli	verv				
1-8					<u> </u>
2. Test values		· · · · · · · · · · · · · · · · · · ·	1		<del> </del>
2-1 Timing device	N = min-1	100	0 1300	1	
	mm	2,2 -			

2-1 Timing device	N = min-1	1000	1300	
	mm	2,2 - 2,8	3,7 - 4,9	
2-2 Feed pump	N = min-1	500	1000	1300
· · ·	kg/cm <sup>2</sup>	2,2 - 2,8	4,0-4,6	5,1 - 5,7
2-3 Overflow rate	N = min-1	1000		
	1	54,0 - 98,0		

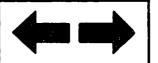
		<u>cc/10s</u> 54,0 - 98	8,0	<b>!</b>
2-4 Delivery rates				
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)		pressure Difference (cc)
End stop	1000 500 1300 1380 1440	43,8 - 45,8 37,5 - 41,5 44,7 - 48,7 12,1 - 18,1 below 4,0		
Shut-off	350	0		
Idle stop	350 500	4,2 - 8,2		
2-5 Magnet		l Voltage max. 8 V Itage 12 - 14 V		

3. Dime	ensions	
K KF MS LDA	3, 2 - 3, 4 5, 7 - 5, 9 1, 5 - 1, 7	mm
Angle of	<u>of control le</u>	
α	9,0 - 17,0	angle
A	2,5 - 7,7	_mm
β	36, 0 - 46, 0	angle
В	11,4 - 15,0	mm
Υ	-	angle
<u>C</u>	<u>-</u>	mm
	,	

Test values

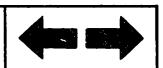
A3

ZEXEL-Distributor pumps



A4

Test values



ZEXEL - Test values

Distributor pumps Engine: 4D56

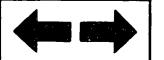
1/3 BOSCH no. 9 460 610 296 DKKC no. 104740-3612

Date: 15.4.1988 MITSURISHI (0)

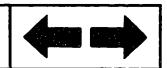
njection pump no. 104640-3332		(NID_\/=#/4/	0E2100DND#22	`			<u>Compai</u>	
rirection of rotation: rear end			0F2100RNP433	<u> </u>			No:	MD 103210
restroke setting: - mm	STUE CTOCKWI		la haldar samb	instinn. '	1 600 001	000 Tast n	************	lima. 1 600 750 01
1. Setting values		Speed	<u>le holder comb</u>   Setting val		1 000 901	Charge - air		<u>line: 1 680 750 01</u> Difference
	<del></del>	min-1		<del></del>	<del> </del>	<u>pressure - ba</u>	r (mmHg)	(cc)
1-1   Timing device travel		1250	T=3, 5-3, 9	(mm)				
1-2   Feed pump pressure		1250	4,5 - 5,1	$(kg/cm^2)$				
1-3   Full load delivery without	charge-	İ						
air pressure Full load delivery with cha	arge-air	1250	45,3 - 46,3	(cc/1000	strokes)			3, 0
pressure	•			(cc/1000)	strokes)		'	
1-4 Low-idle speed regulation		375	6,5 - 9,5					2 0
1-5   Start		100	63, 0 - 83, 0			<b>√</b> ■		2,0
1-6   Maximum speed regulation		2550	15,1 - 21,1					4, 0
1-7 Load-dependent start of del	livery	1250	$T - 0, 6 \pm 0, 2$					4,0
1-8			, ,,,,,	( ,				
2. Test values								
2-1 Timing device	N = min-1	500	750	1250	2100			
	m	m = 0, 6 - 1	,8 1,4 - 2,6	3, 3 - 4, 1	6,6-7,	.8		
2-2 Feed pump	N = min-1 kg/c		,5 4,5 - 5,1	2100 6,5 - 7,1		3. Dime	nsions	
2-3 Overflow rate	$N = \min_{n=1}^{\infty}$			0, 3 - 7, 1		-		
2 3 Over How Tate	cc/10	1	1			K	2 2	7 /1 mm
2-4 Delivery rates	1	3 140, 0 32	., 01	<del></del>	J	-	3, 2 - 3	-
	ed Deliv	ery rate	Charge-air	proceurali	Difforonce		5,7 - 5	
mir			bar (mmHg)	•		LDA	1,1 -	1,3 mm
		- 46,8	s/ bar (ming)	<del></del>	(cc)	_	f contro	llovor
	1	- 46, 3	i			$\frac{\lambda_{\text{lig}} + \delta}{\alpha}$		3,0 angle
	1 '	- 41,2	1			1 1 " 1	10, 5 - 1	•
	1 '	- 23,1				$\frac{1}{\beta}$		1,0 angle
l l		v 5,0		}			$\frac{12,5-1}{12,5}$	_
		0				-    $\frac{7}{7}$	<u> </u>	angle
		v 3,0	1			-	_	mm
		- 10,0				-	<del></del>	
						-		
2-5 Cut	-in voltage	max. 8 V	<del></del>			-		
2-3 1 Cut	, ili voitaut							

Test	values	

A5



A6



(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

Pump speed:

1250

/min

Injection quantity:

 $35.7 \pm 0.5 \text{ cm}^3/1000 \text{ strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated.

2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Pos	sition of control lever	Prescribed values		
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1250	34.7 - 36.7	-	(3.1)	0.2 - 1.0
1250	26.7 - 29.7	-	(2.3)	0.8 - 2.0



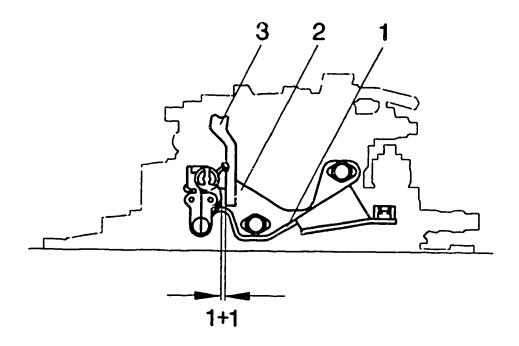


Fig. 1

104740-3612 3/3

l = bracket

2 = M-FICD lever
3 = control lever

- SETTING THE FICD INSTALLATION POSITION
- 1. Maintain control lever in the idle position.
- Set FICD bracket in such a way that the gap dimension between the control lever and the FICD lever equals 1+1 mm.



ZEXEL - Test values

Distributor pumps Engine: 4D56

1/2 BOSCH no. 9 460 610 297

DKKC no. 104740-3632 Date: 15.4.1988 (0)

Company: MITSUBISHI MD 103206 No:

<u>Injection pump no. 104640-3342 (NP-VE4/10F2100RNP432)</u>

Direction of rotation: rear end side clockwise

· · · · · · · · · · · · · · · · · · ·	<u>e holder combination: 1 688 901</u>	doo lest pressure	<u>line: 1 680 750 017</u>
Speed	Setting values		Difference
		pressure - bar (mmHq)	(cc)
1250	T=3,5 - 3,9 (mm)		
1250	4,5 - 5,1 (kg/cm <sup>2</sup> )		
1250	45,3 - 46,3 (cc/1000 strokes)		3.0
	, , , , , , , , , , , , , , , , , , , ,		3, 0
	(cc/1000 strokes)		
375			2,0
100			2,0
2550		· I	
1250			4, 0
	(11111)		
	min-1 1250 1250 1250 375 100 2550	min-1  1250 1250 1250 1250 1250 1250 1250 12	min-1 1250 T=3,5-3,9 (mm) 1250 4,5-5,1 (kg/cm <sup>2</sup> )  1250 45,3-46,3 (cc/1000 strokes)  (cc/1000 strokes) 375 6,5-9,5 (cc/1000 strokes) 100 63,0-83,0 (cc/1000 strokes) 2550 15,1-21,1 (cc/1000 strokes)

E. IEST AUINEZ			_	
2-1 Timing device	N = min-1	500	750	12
	mm	0,6-1,8	1,4 - 2,6	3, 3 -
2 2 Food num	Al .	600	1050	

	nm	0,6-1,8	1,4 - 2,6	3, 3 - 4, 1	6,6 - 7,8
2-2 Feed pump	N = min-1	600	1250	2100	
	kq/cm <sup>2</sup>	[2, 9 - 3, 5]	4,5 - 5,1	6,5 - 7,1	j
2-3 Overflow rate	N = min-1	1250			
	cc/10s	48,0-92,0			

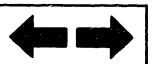
2-4 Delivery rates			
Control lever position	Speed	Delivery rate	Charge-air pre

Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air pressure	
End stop	1250 600 2100 2550	44, 8 - 46, 8 42, 3 - 46, 3 37, 2 - 41, 2 13, 1 - 23, 1	Dar (minny)	(cc)
Shut-off	2900 375	below 5,0		
Idle stop	600 375	below 3,0 6,0 - 10,0		
2-5 Magnet	Cut-in Test vo	voltage max. 8 V ltage 12 - 14 V		

3. Dime	ensions	
K KF MS LDA	3,2 - 3,4 5,7 - 5,9 1,1 - 1,3	mm mm
<u>Angle o</u>	<u>of control le</u>	ver
α	55,0 - 63,0	•
_A	10.5 - 16.0	_mm
β	41,0 - 51,0	angle
В	12,5 - 16,5	<u>mm</u>
Υ	-	angle
<u>C</u>		mm

Test values

ZEXEL-Distributor pumps



**A11** 

Test values

2100



(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

Pump speed:

1250

/min

Injection quantity:

 $35,7 \pm 0,5 \text{ cm}^3/1000 \text{ strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated.

## 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Pos	sition of control lever	Prescribed values		
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1250	34,7 - 36,7	-	(3,1)	0,2-1,0
1250	26,7 - 29,7	-	(2, 3)	0,8-2,0

Test oil: ISO 4113 od **SAE J967d** 

ZEXEL - Test values

Distributor pumps Engine: 4D56

BOSCH no. 9 460 610 298 104740-3642 DKKC no. Date: 15.4.1988 (0)Company: MITSUBISHI No: MD 103207

Injection pump no. 104640-3352

(NP-VE4/10F2100RNP430)

Direction of rotation: rear end side clockwise Prestroke setting: - mm Test-nozzle holder combination: 1 688 901 000 Test pressure line: 1 680 750 017 1. Setting values Speed Setting values |Charge = air Difference min-1 pressure - bar (mmHq) (cc) T=3, 5-3, 9 (mm)1250 540 - 560 1-2 | Feed pump pressure  $4,5-5,1 \text{ (kg/cm}^2)$ 1250 540 - 560 1-3 Full load delivery without chargelair pressure 61,4 - 62,4 (cc/1000 strokes) 1250 540 - 560 4,5 Full load delivery with charge-air 60,4 - 61,4 (cc/1000 strokes) pressure 750 320 - 3401-4 Low-idle speed regulation 6,5 - 9,5 (cc/1000 strokes) 375 2,0 1-5 | Start 63,0 - 83,0 (cc/1000 strokes) 100 1-6 | Maximum speed regulation 22,2 - 28,2 (cc/1000 strokes) 2650 540 - 560 5,5 Load-dependent start of delivery 1-7 1250 T-0,6+0,2 (mm) 540 - 560 1-8

2. Test values

2-1 Timing device	N = min-1	500	750	1250	2100
	mm	0,6 - 1,8	1, 4 - 2, 6	3, 3 - 4, 1	6,6 - 7,8
2-2 Feed pump	N = min-i	600	1250	2100	
	$_{\rm kg/cm^2}$	2,9 - 3,5	4, 5 - 5, 1	6,5-7,1	į
2-3 Overflow rate	N = min-1	1250			
	cc/10s	48,0-92,0			
2 1 Dolivory mates				<del></del>	

		$\underline{-ccros}$	U	
2-4 Delivery rates				····
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air pressure	e Difference
End stop	1250 600 750 2100 2650 3050	60, 9 - 62, 9 45, 8 - 50, 8 59, 9 - 61, 9 52, 8 - 57, 8 20, 2 - 30, 2 below 5, 0	540 - 560 0 320 - 340 540 - 560 540 - 560 540 - 560	
Shut-off	375	0	0	<del> </del>
Idle stop	600 375	below 3, 0 6, 0 - 10, 0	0 0	
2-5 Magnet		voltage max. 8 V Itage 12 - 14 V		

3. Dime	ensions	
V	2 2 2 4	
K	3, 2 - 3, 4	
KF	5,7 - 5,9	
MS	0,9 - 1,1	mm
LDA	3,6 - 3,8	mm
Angle d	of control le	ver
α	55,0 - 63,0	angle
Α	10,5 - 16,0	mm
β	40,0 - 50,0	angle
<u>B</u>	12.1 - 16.1	mm
Υ	-	angle
C	-	mm
		·

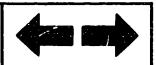
Test values ZEXEL-Distributor pumps











#### Note:

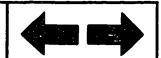
After setting the full-load at 1250/min, adjust the full-load from 750/min and the accelerator pressure from 0.45 kg/cm<sup>2</sup> to 330 mmHg, and then regulate the injection quantity with the acceleratoradjustment screw.

### Note:

Setting the timing device stroke:

Fix LDA at 550 mmHg  $(0.75 \text{ kg/cm}^2)$ 

and put control lever in the full-load delivery position, then set timing device stroke.



(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

540 - 560

mmHg

Pump speed:

1250

/min

Injection quantity:

 $50,3 \pm 0,5 \, \text{cm}^3/1000 \, \text{strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated.

# 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Pos	sition of control lever	Prescribed values		
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1250	49, 3 - 51, 3	540 - 560	(3,1)	0,2-1,0
1250	38,7 - 41,7	540 - 560	(2, 3)	0,8-2,0

ZEXEL-Distributor pumps

**A18** 

Test values

ZEXEL - Test values

Distributor pumps

Engine: 4D56

BOSCH no. 9 460 610 289 104740-3652 DKKC no. Date: 15.4.1988 **(0)** Company: MITSUBISHI

MD 103208

No:

Injection pump no. 104640-3352

(NP-VE4/10F2100RNP430)

	_					
Direction (	of	rotation:	rear	end	side	clockwise

restroke setting: - mm 1. Setting values	Speed	e holder combination: 1 688 901		line: 1 680 750 017
seconny vardes	min-1	Setting values		Difference
1-1  Timing device travel	1250	T = 3, 5 - 3, 9 (mm)	pressure - bar (mmHg) 540 - 560	(cc)
1-2 Feed pump pressure 1-3 Full load delivery without charge-	1250	4,5 - 5,1 (kg/cm <sup>2</sup> )	540 - 560	
air pressure Full load delivery with charge-air	1250	61,4 - 62,4 (cc/1000 strokes)	540 - 560	4, 5
pressure	750	60, 4 - 61, 4 (cc/1000 strokes)	320 - 340	
<pre>1-4 Low-idle speed regulation 1-5 Start</pre>	375 100	6,5 - 9,5 (cc/1000 strokes) 63,0 - 83,0 (cc/1000 strokes)		2,0
1-6 Maximum speed regulation	2650	22, 2 - 28, 2 (cc/1000 strokes)		rr
1-7 Load-dependent start of delivery	1250	$T-0, 6 \pm 0, 2 \text{ (mm)}$	340 300	5,5

2	T	<b>e</b> _	\$ _t	V	a	1	U	е	S	

2-1 Timing device	N = min-l	500	750	1250	2100
	mm	[0,6-1,8]	1,4 - 2,6	3,3 - 4,1	6,6 - 7,8
2-2 Feed pump	N = min-1	600	1250	2100	
	kg/cm <sup>2</sup>	[2, 9 - 3, 5]	4,5 - 5,1	6,5-7,1	
2-3 Overflow rate	N = min-1	1250			
	cc/10s	48,0-92,0			

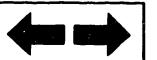
2-4 Delivery rates		<u>CC/103   40, 0 32,</u>	<u> </u>	
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air press	ure Difference
End stop	1250 600 750 2100 2650 3050	60,9 - 62,9 45,8 - 50,8 59,9 - 61,9 52,8 - 57,8 20,2 - 30,2 below 5,0	540 - 560 0 320 - 340 540 - 560 540 - 560 540 - 560	
Shut-off	375	0		
Idle stop	600 375	below 3, 0 6, 0 - 10, 0	0 0	
2-5 Magnet	Cut-in Test vo	voltage max. 8 V ltage 12 - 14 V		

3. Dim	<u>ensions</u>	
K KF MS LDA	3, 2 - 3, 4 5, 7 - 5, 9 0, 9 - 1, 1 3, 6 - 3, 8	mm mm
	of control le	mm
α	55,0 - 63,0	angle
_A	10,5 - 16,0	mm
β	40,0 - 50,0	angle
8	12,1 - 16,1	mm
Υ	_	angle

mm

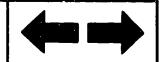
Test values

**ZEXEL-Distributor** pumps



A 20

Test values



#### Note:

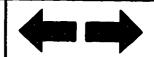
After setting the full-load at 1250/min, ajust the full-load from 750/min and the accelerator pressure from 0.45 kg/cm<sup>2</sup> to 330 mmHg, and then regulate the injection quantity with the acceleratoradjustment screw.

#### Note:

Setting the timing device stroke:

Fix LDA at 550 mmHg  $(0.75 \text{ kg/cm}^2)$ 

and put control lever in the full-load delivery position, then set timing device stroke.



(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

540 - 560

mmHg

Pump speed:

1250

/min

Injection quantity:

 $50,3 \pm 0,5 \, \text{cm}^3/1000 \, \text{strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated.

# 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Position of control lever			Prescribed values		
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)	
1250	49, 3 - 51, 3	540 - 560	(3,1)	0,2 - 1,0	
1250	38,7 - 41,7	540 - 560	(2, 3)	0,8-2,0	

**A23** 

Test values

Distributor pumps Engine: 4D56T

BOSCH no. 9 460 610 299 104740-3662 DKKC no. Date: 15.4.1988 (0) MITSUBISHI Company: MD 103209

No:

Injection pump no. 104640-3362

(NP-VE4/10F2100RNP431)

Direction of rotation: rear end side clockwise Prestroke setting: - mm Test-nozzle holder combination: 1 688 901 000 Test pressure line: 1 680 750 017 1. Setting values Speed Setting values Charge - air Difference min-1 pressure - bar (mmHq) (cc) 1-1 |Timing device travel T = 3, 5 - 3, 9 (mm)1250 540 - 560 1-2 | Feed pump pressure 1250  $4,5-5,1 (kg/cm^2)$ 540 - 560 1-3 |Full load delivery without chargelair pressure 1250 61,4 - 62,4 (cc/1000 strokes) 540 - 560 4,5 Full load delivery with charge-air pressure 750 60, 4 - 61, 4 (cc/1000 strokes) 320 - 3401-4 Low-idle speed regulation 375 6,5 - 9,5 (cc/1000 strokes) 2,0 0 1-5 | Start 100 63,0 - 83,0 (cc/1000 strokes) 0 1-6 Maximum speed regulation 22,2 - 28,2 (cc/1000 strokes) 2650 540 - 560 5,5 Load-dependent start of delivery 1250 T-0.6 + 0.2 (mm)540 - 560 1-8

2. Test values

2-1 Timing device	N = min-1	500	750	1250	2100
		0,6-1,8	1,4 - 2,6	3, 3 - 4, 1	6,6 - 7,8
2-2 Feed pump	N = min-1	600	1250	2100	
	kq/cm <sup>2</sup>	[2, 9 - 3, 5]	4,5-5,1	6,5 - 7,1	`
2-3 Overflow rate	N = min-1	1250			
	cc/10s	48, 0-92, 0	ļ		

2-4	<u>De 1</u>	ivery	rates

2-4 Delivery rates	·			
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air pressure bar (mmHg)	Difference (cc)
End stop	1250 600 750 2100 2650 3050	60,9 - 62,9 45,8 - 50,8 59,9 - 61,9 52,8 - 57,8 20,2 - 30,2 below 5,0	540 - 560 0 320 - 340 540 - 560 540 - 560 540 - 560	
Shut-off	375	0	0	
Idle stop	600 375	below 3, 0 6, 0 - 10, 0	0	
2-5 Magnet		voltage max. 8 V oltage 12 - 14 V	<b>.</b>	

3.	Dimensions	

K	3, 2 - 3, 4	mm
KF	5,7 - 5,9	mm
MS	0,9 - 1,1	mm
LDA	3,6 - 3,8	mm
Angle	of control le	ever
α	55,0 - 63,0	angle
Α	10,5 - 16,0	mm
β	40,0 - 50,0	angle
В	12,1 - 16,1	
Y	-	angle
<u>C</u>		_mm

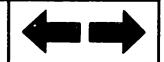
Test values

**ZEXEL-Distributor pumps** 



**B2** 

Test values



#### Note:

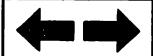
• After setting the full-load at 1250/min, ajust the full-load from 750/min and the accelerator pressure from 0.45 kg/cm<sup>2</sup> to 330 mmHg, and then regulate the injection quantity with the acceleratoradjustment screw.

#### Note:

Setting the timing device stroke:

Fix LDA at 550 mmHg  $(0.75 \text{ kg/cm}^2)$ 

and put control lever in the full-load delivery position, then set timing device stroke.



(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

540 - 560

mmHg

Pump speed:

1250

/min

Injection quantity:

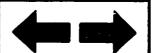
 $50,3 \pm 0,5 \, \text{cm}^3/1000 \, \text{strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated.

# 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Position of control lever			Prescribed values		
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)	
1250	49, 3 - 51, 3	540 - 560	(3,1)	0,2-1,0	
1250	38,7 - 41,7	540 - 560	(2,3)	0,8-2,0	



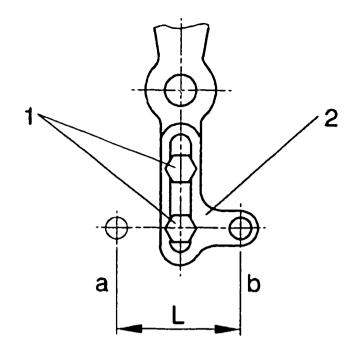


Fig. 2

104740-3662 4/4

1 = screw

a = full-load

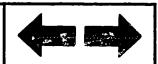
2 = A/T lever

b = idle

- SETTING A/T CONNECTING LEVER
- Turn control lever from the idle position to full-load position, and check that the travel (L) of the A/T lever equals

 $32.9 \pm 1 \, \text{mm}.$ 

- When the measurement L is not as prescribed, loosen the screw and adjust the A/T lever.
- 3. Following adjustment, tighten screw.



Test oil: ISO 4113 od SAE J967d

Magnet

ZEXEL - Test values

Distributor pumps Engine: 4D56 1/3
BOSCH no. 9 460 610 300
DKKC no. 104740-3672
Date: 15.4.1988 (0)
Company: MITSUBISHI
No: MD 106444

Injection pump no. 104640-3372 (N Direction of rotation: rear end side clockwise

(NP-VE4/10F2100RNP460)

Prestroke setting: - mm  1. Setting values	Test-nozz Speed min-1		Charge - air	line: 1 680 750 017 Difference
<ul> <li>1-1 Timing device travel</li> <li>1-2 Feed pump pressure</li> <li>1-3 Full load delivery without charge-air pressure</li> <li>Full load delivery with charge-air</li> </ul>	1250 1250 1250	T=3,5 - 3,9 (mm) 4,5 - 5,1 (kg/cm <sup>2</sup> ) 45,3 - 46,3 (cc/1000 strokes)	pressure - bar (mmHg)	(çc) 3, 0
pressure 1-4 Low-idle speed regulation 1-5 Start 1-6 Maximum speed regulation 1-7 Load-dependent start of delivery 1-8	375 100 2550 1250	(cc/1000 strokes) 6,5 - 9,5 (cc/1000 strokes) 63,0 - 83,0 (cc/1000 strokes) 15,1 - 21,1 (cc/1000 strokes) T-0,4 + 0,8 (mm)		2, 0 4, 0

L. IESL Values					
2-1 Timing device	N = min-1	500	750	1250	2100 !
		[0,6-1,8]	1,4 - 2,6	3, 3 - 4, 1	6,6 - 7.8
2-2 Feed pump	N = min-1	600	1250	2100	
	$_{\text{kg/cm}^2}$	[2, 9 - 3, 5]	4.5 - 5.1	6,5 - 7,1	
2-3 Overflow rate	N = min-1	1250			
	1 / 2 0	1			ł i

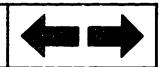
		***************************************	,	1		1
		cc/10s	48, 0-92, (			
2-4 Delivery rates					<del></del>	<del></del>
Control lever position	Speed min-1	Delivery	rate	Charge-air bar (mmHq)	•	
End stop	1250	44,8 - 4	6,8	Dar (mining)		(cc)
	2100	42,3 - 4 37,2 - 4	1,2			
	2550 2900	13,1 - 2 below	•		;	
Shut-off	375	0				<del></del>
Idle stop	600 375	below 6, 0 - 1	3, 0 0, 0			
2-5	Cut-in	voltage max				

Test voltage 12 - 14 V

3. Di	mensions 	
K	3, 2 - 3, 4	mm
KF	5,7 - 5,9	
MS	1,1 - 1,3	mm
LDA		
Angle	of control le	ver
α	55,0 - 63,0	angle
Α	10.5 - 16.0	mm
β	41,0 - 51,0	angle
B	12,5 - 16,5	mm
Υ	-	angle
C	_	mm

Test values	4
ZEXEL-Distributor pumps	





(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

Pump speed:

1250

/min

mmHq

Injection quantity:

 $35,7 \pm 0,5 \text{ cm}^3/1000 \text{ strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1/3).

# 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Pos	ition of control lever	Prescribed va	alues	
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1250	34,7 - 36,7	-	(3,1)	0,2-1,0
1250	26,7 - 29,7	-	(2,3)	0,8-2,0

**B10** 

Test values

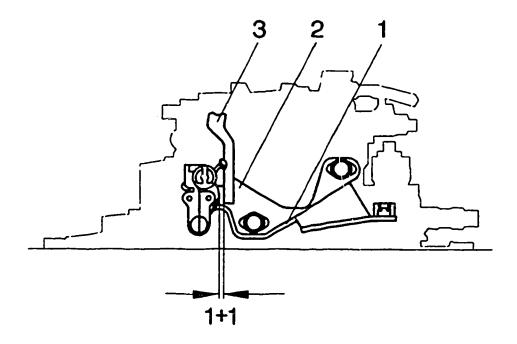


Fig. 3

104740-3672 3/3

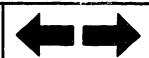
1 = bracket

2 = M-FICD lever

3 = control lever

- SETTING THE FICD INSTALLATION POSITION
- 1. Maintain control lever in the idle position.
- Set FICD bracket in such a way that the gap dimension between the control lever and the FICD lever equals 1+1 mm.





ZEXEL - Test values

Distributor pumps

Engine: 4D56

BOSCH no. 9 460 610 301

DKKC no. 104740-3682 Date: 15.4.1988

Date: 15.4.1988 (Company: MITSUBISHI
No: MD 106426

Injection pump no. 104640-3382 (N

(NP-VE4/10F2100RNP461)

וטן тес'	tion of rotation: rear end side clockwi	se			
Prest	roke setting: - mm	Test-nozz	le holder combination: 1 688 901	000 Test pressure	line: 1 680 750 017
ļ	Setting values	Speed min-1	Setting values		Difference
1-1	Timing device travel	1250	T=3, 5-3, 9  (mm)		
	Feed pump pressure Full load delivery without charge-	1250	4,5 - 5,1 (kg/cm <sup>2</sup> )		
	air pressure Full load delivery with charge-air	1250	45,3 - 46,3 (cc/1000 strokes)		3, 0
	pressure		(cc/1000 strokes)		
1	Low-idle speed regulation	375	6,5 - 9,5 (cc/1000 strokes)		2,0
	Start	100	63,0 - 83,0 (cc/1000 strokes)	i	1 -, •
	Maximum speed regulation	2550	15,1 - 21,1 (cc/1000 strokes)		4, 0
1-7	Load-dependent start of delivery	1250	T - 0, 6 + 0, 2  (mm)		]

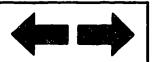
	·			<del></del>
N = min-1	500	750	1250	2100
mm	0,6-1,8	1,4 - 2,6	3,3-4,1	6,6 - 7,8
N = min-1	600	1250	2100	
kq/cm <sup>2</sup>	[2,9-3,5]	4,5-5,1	6,5-7,1	
N = min-1	1250			
cc/10s	48,0-92,0			
	N = min-1 kg/cm <sup>2</sup> N = min-1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	mm 0,6-1,8 1,4-2,6 3,3-4,1  N = min-1 600 1250 2100  kg/cm <sup>2</sup> 2,9-3,5 4,5-5,1 6,5-7,1  N = min-1 1250

		<u>cc/10s</u>  48,0-92,	01		į.
2-4 Delivery rates				· <del></del>	<del></del>
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air	pressure	
End stop	1250 600 2100 2550	44,8 - 46,8 42,3 - 46,3 37,2 - 41,2 14,6 - 21,6	Dai (ming)		(cc)
Shut-off	<u>2900</u> 375	below 5,0			
Idle stop	600 375	below 3, 0 6, 0 - 10, 0			<del></del>
2-5 Magnet	Cut-in Test vo	voltage max. 8 V ltage 12 - 14 V			

3. Dim	ensions	
K KF MS LDA	3, 2 - 3, 4 5, 7 - 5, 9 1, 1 - 1, 3	
Angle	of control le	ver
α	19,0 - 27,0	angle
Α	12.4 - 17.8	_mm
β	41,0 - 51,0	angle
В	12,1 - 16,1	_mm
Υ	-	angle
C		_mm_

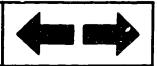
Test values

ZEXEL-Distributor pumps



**B** 13

Test values



(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

Pump speed:

1250

/min

Injection quantity:

 $35,7 \pm 1 \text{ cm}^3/1000 \text{ strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1/2).

# 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Pos	Position of control lever			llues
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1250	34,7 - 36,7	-	(3,1)	0,2-1,0
1250	26,7 - 29,7	-	(2,3)	ù, 8 - 2, 0

**B15** 

Test values

Test oil: ISO 4113 od SAE J967d ZEXEL - Test values

Distributor pumps
Engine: 4D56

1/2 BOSCH no. 9 460 610 318 DKKC no. 104740-3692 Date: 15.4.1988 (0) Company: MITSUBISHI

MD 109319

No:

Injection pump no. 104640-3382

(NP-VE4/10F2100RNP461)

1.	Setting values	Speed min-1	Setting values	Charge - air pressure - bar (mmHq)	Difference (cc)
-1	Timing device travel	1250	T=3, 5-3, 9  (mm)		
-2	Feed pump pressure	1250	4,5 - 5,1 (kg/cm <sup>2</sup> )		
-3	Full load delivery without charge-				
	air pressure	1250	45,3 - 46,3 (cc/1000 strokes)		3, 0
	Full load delivery with charge-air	İ			3,0
	pressure		(cc/1000 strokes)	. <b>[</b>	
-4	Low-idle speed regulation	375	6,5 - 9,5 (cc/1000 strokes)		2,0
-5	Start	100	63,0 - 83,0 (cc/1000 strokes)		2,0
-6	Maximum speed regulation	2550			μ∩
<b>-</b> 7	Load-dependent start of delivery	1250			4,0
		1	15,1 - 21,1 (cc/1000 strokes) T-0,6 ± 0,2 (mm)		4, (

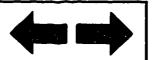
2-1 Timing device	N = min-1	500	750	1250	2100
	mm	0,6-1,8	1,4 - 2,6	3,3 - 4,1	6,6 - 7,8
2-2 Feed pump	N = min-1	600	1250	2100	
	kg/cm <sup>2</sup>	[2,9-3,5]	4,5 - 5,1	6,5 - 7,1	
2-3 Overflow rate	N = min-1	1250			
	cc/10s	48, 0-92, 0			ļ
2 A Dolivany mates		1.07.0	<u> </u>	L	<u> </u>

2-4 Delivery rates			<del></del>	<del></del>	<del></del>
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air	pressure	Difference (cc)
End stop	1250 600 2100 2550 2900	44, 8 - 46, 8 42, 3 - 46, 3 37, 2 - 41, 2 14, 6 - 21, 6 below 5, 0	Dat (mmrg)		(()
Shut-off Idle stop	375 600 375	0 below 3, 0 6, 0 - 10, 0			
2-5 Magnet	Cut-in Test vo	voltage max. 8 V ltage 12 - 14 V			

K 3,2 - 3,4 mm  KF 5,7 - 5,9 mm  MS 1,1 - 1,3 mm  LDA -  Angle of control lever  α 19,0 - 27,0 angle  A 12,4 - 17,8 mm  β 41,0 - 51,0 angle  B 12,1 - 16,1 mm  Υ - angle	3. Dim	ensions	
α   19,0 - 27,0 angle A   12,4 - 17,8 mm  β   41,0 - 51,0 angle B   12,1 - 16,1 mm	KF MS	5,7 - 5,9	mm
A 12,4 - 17,8 mm β 41,0 - 51,0 angle Β 12,1 - 16,1 mm	Angle o	of control le	ver
β 41,0 - 51,0 angle B 12,1 - 16,1 mm	α	19,0 - 27,0	angle
B 12,1 - 16,1 mm	_A		
	β	41,0 - 51,0	angle
Y - angle	_B	12,1 - 16,1	mm
	Υ	-	angle
C - mm	C		mm

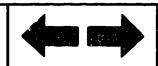
Test values

ZEXEL-Distributor pumps



B17

Test values



(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHq

Pump speed:

1250

/min

Injection quantity:

 $35.7 \pm 1 \text{ cm}^3/1000 \text{ strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1/2).

# 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Po	Position of control lever			llues
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1250	34,7 - 36,7	-	(3,1)	0,2-1,0
1250	26,7 - 29,7	-	(2, 3)	0,8-2,0

Test values

ZEXEL - Test values

Distributor pumps Engine: 4D56

BOSCH no. 9 460 610 291

DKKC no. 104740-3712

Date: 15.4.1988 (0)

Company: MITSUBISHI

No: MD 106446

Injection pump no. 104640-3392

(NP-VE4/10F2100RNP462)

Direction of rotation: rear end side clockwise Prestroke setting: - mm Test-nozzle holder combination: 1 688 901 000 Test pressure line: 1 680 750 017 1. Setting values Speed Setting values Charge - air | Difference pressure - bar (mmHq) (cc) รกรัก-1 T=3, 5-3, 9 (mm)|Timing device travel 1250 540 - 560  $4,5-5,1 \text{ (kg/cm}^2)$ 1-2 | Feed pump pressure 1250 540 - 560 1-3 Full load delivery with charge-air 61, 4 - 62, 4 (cc/1000 strokes) air pressure 1250 540 - 560 4,5 Full load delivery with charge-air 60, 4 - 61, 4 (cc/1000 strokes) pressure 750 320 - 3401-4 Low-idle speed regulation 6,5 - 9,5 (cc/1000 strokes) 375 0 2,0 1-5 | Start 63,0 - 83,0 (cc/1000 strokes) 100 0 1-6 | Maximum speed regulation 22,2 - 28,2 (cc/1000 strokes) 2650 540 - 560 5,5 Load-dependent start of delivery 1250 T-0,6+0,2 (mm) 540 - 560 1-8

2. Test values

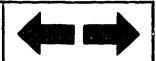
2-1 Timing device	N = min-1	500	750	1250	2100
	nm	0,6 - 1,8	1, 4 - 2, 6	3, 3 - 4, 1	6,6 - 7,8
2-2 Feed pump	N = min-1	600	1250	2100	
	kg/cm <sup>2</sup>	2,9 - 3,5	4,5-5,1	6,5-7,1	
2-3 Overflow rate	N = min-1	1250			
	cc/10s	48,0-92,0			

		CC/IUS $[40,0]$ $[32,$	U	
2-4 Delivery rates				
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air pressure	Difference (cc)
End stop	1250 600 750 2100 2650 3050	60, 9 - 62, 9 45, 8 - 50, 8 59, 9 - 61, 9 52, 8 - 57, 8 20, 2 - 30, 2 below 5, 0	540 - 560 0 320 - 340 540 - 560 540 - 560 540 - 560	
Shut-off	375	0	0	
Idle stop	600 375	below 3, 0 6, 0 - 10, 0	0 0	
2-5 Magnet	Cut-in v	voltage max. 8 V  tage 12 - 14 V		

3. Dime	ensions	
K	•	mm
KF	5,7 - 5,9	mm
MS	0,9 - 1,1	mm
_LDA	3,6 - 3,8	_mm
Angle o	of control le	
α	19,0 - 27,0	angle
_A	10,5 - 16,0	
β	40,0 - 50,0	
В	12.1 - 16.1	mm_
Υ	-	angle
_C		mm
]		

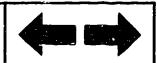
Test values

**ZEXEL-Distributor pumps** 



**B21** 

Test values



## Note:

• After setting the full-load at 1250/min, adjust the full-load from 750/min and the accelerator pressure from 0,45 kg/cm<sup>2</sup> to 330 n.mHg, and then regulate the injection quantity with the accelerator-adjustment screw.

## Note:

• Setting the timing device stroke:

Fix LDA at 550 mmHg (0,75 kg/cm<sup>2</sup>)

and put control lever in the full-load delivery position, then set timing device stroke.

- SETTING LOAD-DEPENDENT START OF DELIVERY
  - 1. To set
    - (1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

540 - 560

mmHq

Pump speed:

1250

/min

Injection quantity:

 $50,3 \pm 0,5 \, \text{cm}^3/1000 \, \text{strokes}$ 

- (2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated (page 1/2).
- 2. Checking load-dependent start of delivery

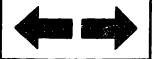
Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Position of control lever			Prescribed values		
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)	
1250	49, 3 - 51, 3	540 - 560	(3,1)	0,2-1,0	
1250	38,7 - 41,7	540 - 560	(2,3)	0,8-2,0	



**B23** 

Test values



Distributor pumps Engine: 4D56T

BOSCH no. 9 460 610 302

DKKC no. 104740-3722

Date: 15.4.1988 (0)

Company: MITSUBISHI
No: MD 106429

Injection pump no. 104640-3402

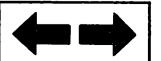
(NP-VE4/10F2100RNP463)

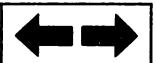
<u>restroke setting: - mm</u>  . Setting values	1 Canad	zle holder combination: 1 688 901		
. secting values	Speed	Setting values	Charge - air	Difference
	<u>min-l</u>		pressure - bar (mmHq)	(cc)
-1  Timing device travel	1250	T=3, 5-3, 9  (mm)	540 - 560	
-2   Feed pump pressure	1250	4,5 - 5,1 (kg/cm <sup>2</sup> )	540 - 560	
-3 Full load delivery with charge-air		(Kg/Cill <sup>2</sup> )	340 300	
air pressure	1250	61,4 - 62,4 (cc/1000 strokes)	540 560	
Full load delivery with charge-air	1 .230	or, a or, a (cc/1000 strokes)	540 - 560	4,5
pressure	750	60 11 - 61 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	1	60,4 - 61,4 (cc/1000 strokes)	320 - 340	
-4 Low-idle speed regulation	375	6,5 - 9,5 (cc/1000 strokes)	0	2,0
-5 Start	100	63,0 - 83,0 (cc/1000 strokes)	0	1
-6 Maximum speed regulation	2650	22,2 - 28,2 (cc/1000 strokes)	540 - 560	5,5
-7 Load-dependent start of delivery	1250	T-0,6+0,2 (mm)	540 - 560	3,3

2-1 Timing device	N = min-1	500	750	1250	2100
	mm	0,6 - 1,8	1,4-2,6	3, 3 - 4, 1	6,6 - 7,8
2-2 Feed pump	N = min-1	600	1250	2100	
	kg/cm <sup>2</sup>	2,9 - 3,5	4,5 - 5,1	6,5-7,1	
2-3 Overflow rate	N = min-1	1250			<del></del>
2-4 Delivery rates	cc/10s	48,0-92,0	<del></del>		

2-4 Delivery rates				
Control lever position	Speed	Delivery rate	Charge-air pressure	Difference
	<u>min-l</u>	(cc/1000 strokes)	bar (mmHg)	(cc)
End stop	1250	60,9 - 62,9	540 - 560	
	600	45,8 - 50,8	0	
	750	59,9 - 61,9	320 - 340	
	2100	52,8 - 57,8	540 - 560	
	2650 3050	20,2 - 30,2 below 5,0	540 - 560 540 - 560	
Shut-off	375	0	0	*
Idle stop	600	below 3,0	0	
	375	6,0 - 10,0	0	
2-5	Cut-in	voltage max. 8 V		
Magnet	Test vo	ltage 12 - 14 V		

3. Dim	ensions I		
K KF	3,2 - 3,4 5,7 - 5,9	mm	
MS LDA	0,9 - 1,1 3,6 - 3,8	mm	
	of control le	ver	
α A	19,0 - 27,0 10,5 - 16,0		
β	40,0 - 50,0	angle	
Y	12,1 - 16,1 -	_mm angle	_
С		mm	_

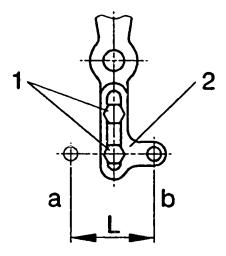




### Note:

• After setting the full-load at 1250/min, adjust the full-load from 750/min and the accelerator pressure from

and then regulate the injection quantity with the accelerator-adjustment screw.



### Note:

• Setting the timing device stroke:

550 mmHg  $(0,75 \text{ kg/cm}^2)$ 

and put control lever in the full-load delivery position, then set timing device stroke.

### Fig. 4

### • SETTING A/T CONNECTING LEVER

1. Turn control lever from the idle position to full-load position, and check that the travel (L) of the A/T lever equals

$$32, 9 \pm 1 \text{ mm}$$
.

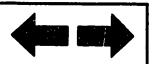
- 2. When the measurement L is not as prescribed, loosen the screw and adjust the A/T lever.
- 3. Following adjustment, tighten screw.

1 = screw

2 = A/T lever

a = full-load

b = idle



(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

540 - 560

mmHg

Pump speed:

1250

/min

C6

Injection quantity:

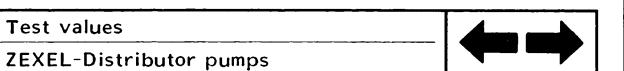
 $50,3 \pm 0,5 \, \text{cm}^3/1000 \, \text{strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated.

## 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Position of control lever			Prescribed values		
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)	
1250	49,3 - 51,3	540 - 560	(3,1)	0,2-1,0	
1250	38,7 - 41,7	540 - 560	(2,3)	0,8-2,0	



Test values

Distributor pumps

Engine: 4D56

1/2 BOSCH no. 9 460 610 303 DKKC no. 104740-3762 15.4.1988 Date: (0) Company: MITSUBISHI MD 120184

No:

Injection pump no. 104640-3432 (NI Direction of rotation: rear end side clockwise

(NP-VE4/10F2000RNP515)

	roke setting: - mm	Test-nozzl	<u>e holder combination: 1 688 901</u>	000 Test pressure	line: 1 680 750 017
1.	Setting values	Speed	Setting values	Charge - air	Difference
		min-l		pressure - bar (mmHq)	(cc)
1-1	Timing device travel	1250	T=3,5-3,9  (mm)		
1-2	Feed pump pressure	1250	4,5 - 5,1 (kg/cm <sup>2</sup> )	İ	
1-3	Full load delivery without charge-				
	air pressure	1250	45,3 - 46,3 (cc/1000 strokes)		3, 0
	Full load delivery with charge-air				3,0
	pressure		(cc/1000 strokes)		
1-4	Low-idle speed regulation	375	6,5 - 9,5 (cc/1000 strokes)		2,0
1-5	Start	100	63,0 - 83,0 (cc/1000 strokes)		2,0
1-6	Maximum speed regulation	2150	15,1 - 21,1 (cc/1000 strokes)	III.	4, 0
1-7	Load-dependent start of delivery	1250	T=0,4 - 0,8 (mm)		7,0
1-8_			1 -0, - 0, 0 (11111)		

2. lest values					
2-1 Timing device	N = min-1	500	750	1250	2000
	mm	0,6-1,8	1,4 - 2,6	3,3 - 4,1	6, 2 - 7, 4
2-2 Feed pump	N = min-1	600	1250	2000	
	kg/cm <sup>2</sup>	2,9-3,5	4,5 - 5,1	6,3 - 6,9	
2-3 Overflow rate	N = min-1	1250			
	cc/10s	48, 0-92, 0			

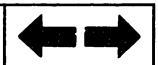
		cc/10s 48,0-92,	0	
2-4 Delivery rates				· <u></u>
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air pressure	e Difference
End stop	1250 600 2000 2150 2500	44,8 - 46,8 42,3 - 46,3 37,2 - 41,2 13,1 - 23,1 below 5,0		
Shut-off	375	0 0		<del> </del>
Idle stop	375 600	6, 0 - 10, 0 below 3, 0		
2-5	Cut-in	voltage max. 8 V		

Test voltage 12 - 14 V

3. Dim	ensions	
K	3,2 - 3,4	mm
KF	5,7 - 5,9	mm
MS	1,1 - 1,3	mm
LDA		
Angle (	of control le	ver
α	55,0 - 63,0	angle
<u>A</u>	10.5 - 16.0	mm
β	39,0 - 49,0	angle
В	11.7 - 15.7	_mm
Y	-	angle
C		_mm
	•	

Magnet





(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

-

mmHg

Pump speed:

1250

/min

Injection quantity:

35, 2 - 36, 2 cm<sup>3</sup>/1000 strokes

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1/2).

## 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Po	sition of control lever	Prescribed values		
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1250	34.7 - 36.7	-	(3.1)	0.2 - 1.0
1250	26.7 - 29.7	-	(2.3)	0.8 - 2.0

**ZEXEL-Distributor pumps** 

Test values

ZEXEL - Test values

Distributor pumps

Engine: TD25

BOSCH no. 9 460 610 314 DKKC no. 104740-9633 Date: 15.4.1988 (0)

Company: NISSAN DIESEL No: 16700 44G04

Injection pump no. 104640-9633 (N

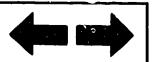
(NP-VE4/10F2150RNP567)

1. Setting values	Speed min-1	<u>zle holder combination: 1 688 901</u> Setting values		Difference
1-1   Timing device travel 1-2   Feed pump pressure	1700 1700	on 6,1 - 6,9(mm) off 4,7 - 5,1 on 5,9 - 6,7(kg/cm <sup>2</sup> )	pressure sur thanny	<u> </u>
1-3 Full load delivery without charge- air pressure	1100	off 4,9 - 5,5  48,0 - 49,0 (cc/1000 strokes)		3, 0
<ul> <li>1-4   Low-idle speed regulation</li> <li>1-5   Start</li> <li>1-6   Maximum speed regulation</li> <li>1-7   Load-dependent start of delivery</li> </ul>	350 100 2500	4,5 - 8,5 (cc/1000 strokes) 45,0 - 80,0 (cc/1000 strokes) 10,1 - 14,1 (cc/1000 strokes)		2,0

2-1 Timing device	Pulling electro- magnet	ON	1700	1700	OFF	2300
2-2 Feed pump	$N = \min_{n=1}^{\infty} Mn$	1	6, C-7, O	1		6.0-7.0
z-z reco pamp	$N = \min -1$ $kq/cm^2$	1000	1700 5, 9-6, 7	1000	1700	2150
2-3 Overflow rate	N = min-1	1100	1100	(withou	t	13,8-6,4
2-4 Delivery rates	cc/10s	43,0-87,0	60-130	0-ring	1)	

2-3 Overriow rate	N = min-1	1100   1100	∥ (without	‡
	cc/10s	43,0-87,0 60-130	0 O-ring)	
2-4 Delivery rates		<del></del>		
Control lever position		Delivery rate (cc/1000 strokes)	Charge-air press	
End stop	1100	47,5 - 49,5	Dar (ming)	(cc)
	600 2150	45,1 - 49,1 38,5 - 42,8		
	2300 2500	28, 3 - 37, 3		
	2700	9,6 - 14,6 below 5,0		
Shut-off	350	0		
Idle stop	350 450	4,5 - 8,5 below 3,0		
		3,0		
2-5	Cut-in vo	ltage max. 8 V	<del></del>	<del></del>
Magnet		age 12 - 14 V		

3. Di	mensions 	
K	3,2 - 3,4	mm
KF	5,7 - 5,9	
MS	0,9 - 1,1	mm
LDA		_mm
Angle	of control le	ver
α	35,5 - 43,5	angle
YA	24, 3 - 28, 7	_mm
β	31,0 - 41,0	angle
B	9, 3 - 12, 9	mm
Υ	-	angle
C	-	mm





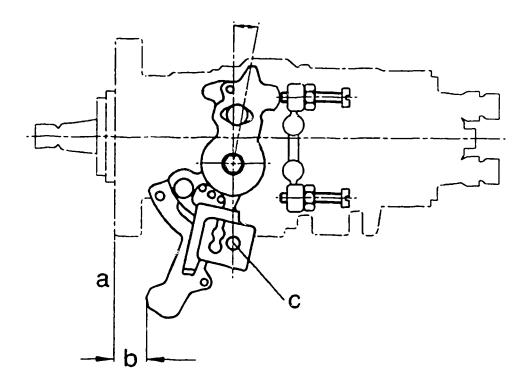


Fig. 5

104740-9633 2/2

a = flange facing

b = measurement "YA"

c = bore A

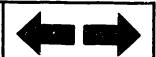
• POSITION FOR MEASURING CONTROL LEVER ANGLE

(1) Measure control lever angle  $(\alpha, \beta, \Upsilon)$  at bore A.

### Note:

 The pulling electromagnet is not defined as ON or OFF.
 All specifications here correspond to OFF.

Test values



Test oil: ISO 4113 od SAE J967d

ZEXEL - Test values

Distributor pumps Engine: 4JB1-A

BOSCH no. 9 460 610 319 DKKC no. 104741-1272 Date: 15.4.1988 (0)Company: ISUZU No: 894426 8511

Injection pump no. 104641-1172

(NP-VE4/11F1800RNP419)

. Setting values	Speed min-1	Setting values	Charge - air pressure - bar (mmHg)	Difference (cc)
-1  Timing device travel	1550	1,7 - 2,1 (mm)		
-2   Feed pump pressure	1550	5,1-5,5 (kg/cm <sup>2</sup> )		
-3 Full load delivery without charge-				
air pressure	1000	44,1 - 45,1 (cc/1000 stroke	5)	3, 5
Full load delivery with charge-air				
pressure		(cc/1000 stroke	(2	
-4 Low-idle speed regulation	390	7,0 - 11,0 (cc/1000 stroke		2,0
-5   Start	100	75,0 - 115,0 (cc/1000 stroke		
-6   Maximum speed regulation	2100	9,8 - 15,8 (cc/1000 stroke		3,5
-7 Load-dependent start of delivery	1		~ ·	1 2,3

<u> </u>	<u> </u>	<u>_e</u>	<u>   5                                 </u>	τ	V_	_ <b>a</b> _	ı	U	_е	S	
2-1		Ti	m	ing	de	vic	:6				

2-1 Timing device	Pulling electro- magnet N = min <sup>-1</sup> MM	690 <sup>ON</sup> 890 0, 5	1400-1500 0,5	011 1,6 - 2,2	1900 5, 3 - 6, 2
2-2 Feed pump	N = min-l kg/cm <sup>2</sup>	1000 3,1 - 3,7	1550 5,1 - 5,5	1850 6,0 - 6,6	
2-3 Overflow rate	N = min-1 cc/10s	1550 67, 0-111, 0			

<u>2-4 Delivery rates</u>					
Control lever position	Speed	Delivery rate	Charge-air	pressure	Difference
	min-1	(cc/1000 strokes)			(cc)
End stop	1000	43,6 - 45,6			•
·	500	41,8 - 48,8			
	700	34, 3 - 38, 3	ł		
	1350	45,0 - 49,0			
	1700	44,4 - 49,4			
	1900	32,5 - 39,5 9,3 - 16,3	1		
	2100		<u>†</u>		
Sind - CC	2300	below 7.0	<del></del>		
Shut-off	390	0			
Idle stop	390	7,0 - 11,0			
	550	below 3,0			
2-5	Cut-in	voltage max. 8 V	ļ		
Magnet		1tage 12 - 14 V			

3. Dime	ensions	
K KF MS LDA	2,7 - 2,9 4,9 - 5,1 0,9 - 1,1	mm mm mm mm
Angle o	of control le	ver
α	14,0 - 22,0 2,5 - 7,6	•
β	30,0 - 40,0	•
B	8,7 - 12,6	mm angle

### Note:

The pulling electromagnet is not defined as ON or OFF. All specifications here correspond to OFF.

mm

Test values

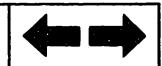
**C14** 

**ZEXEL-Distributor pumps** 



C15

Test values



Test oil: ISO 4113 od SAE J967d

ZEXEL - Test values

Distributor pumps Engine: 4JB1CDT BOSCH no. 9 460 610 315 DKKC no. 104741-1742 Date: 15.4.1988 (0

Date: 15.4.1988 (O Company: ISUZU

No: 894475 1614

<u>Injection pump no. 104641-1742</u> (NP-VE4/11F1900RNP578)

Direction of rotation: rear end side clockwise

1. Setting values	Speed min=1	le holder combination: 1 688 901   Setting values	Charge - air  pressure - bar (mmHg)	Difference
<ul> <li>1-1 Timing device travel</li> <li>1-2 Feed pump pressure</li> <li>1-3 Full load delivery without charge- air pressure</li> </ul>	1700 1700 1250	5,0 - 5,4 (mm) 5,2 - 5,6 (kg/cm <sup>2</sup> ) 63,2 - 64,2 (cc/1000 strokes)	590 - 610 590 - 610	
Full load delivery with charge-air pressure 1-4 Low-idle speed regulation 1-5 Start	900 385 100	50,9 - 51,9 (cc/1000 strokes) 3,1 - 7,1 (cc/1000 strokes) 60,0 -100,0 (cc/1000 strokes)	340 - 360 0 0	3, 5 4, 5 2, 0 4, 5
1-5   Start 1-6   Maximum speed regulation 1-7   Load-dependent start of delivery 1-8	2300	60,0-100,0 (cc/1000 strokes) 19,3-25,4 (cc/1000 strokes)	0	

<u> </u>						
2-1 Timing device	Pulling electro-	ON 500	OFF	1450	1700	1850
	$N = min^{-1}$ MM	over 0, 5		12,1-2,9	4,9-5,5	5, 8-6, 5
2-2 Feed pump	N = min-1	500	500	1450	1700	1850
	kg/cm <sup>2</sup>	4.0-6.0	over 0.8	4, 3-4, 9	5.2-5.6	5.6-6.2
2-3 Overflow rate	N = min-1		1700			
	cc/10s		73 - 150			
2-4 Delivery rates			<del></del>	<del></del>		

	cc/1(	)s     73 - 1	50	
2-4 Delivery rates		V		
Control lever position	Speed min-1	Delivery rate (cc/1000, strokes)	Charge-air pressure	Difference (cc)
End stop	1250 600 750 900 1800 2300 2500	62,7 - 64,7 33,1 - 41,1 38,7 - 42,7 50,4 - 52,4 54,6 - 61,6 18,8 - 25,8 below 5,0	590 - 610 90 - 110 170 - 180 340 - 360 590 - 610 590 - 610 590 - 610	
Shut-off	385	0	0	
Idle stop	385	3,1 - 7,1 below 3,0	0 0	
2-5 Magnet	Cut-in voltage max. 8 V Test voltage 12 - 14 V			

3. Dime	ensions	
K KF MS LDA	2,7 - 2,9 5,7 - 5,9 0,8 - 1,0 4,4 - 4,6	mm mm
Angle α	of control le   14,0 - 22,0	
A	11, 3 - 14, 7	•
β	32,0 - 42,0	
В	10,1 - 13,6	mm
Υ	-	angle
<u>C</u>	-	mm

Test values

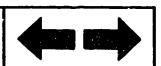
**C16** 

ZEXEL-Distributor pumps



**C17** 

Test values



- After setting the full-load at 1250/min, adjust the full-load from 900/min and the accelerator pressure from 340 - 360 mmHg, and then set the injection quantity with the accelerator compensator-adjustmen's screw.
- The pulling electromagnet is not defined as ON or OFF. All specifications here correspond to OFF.
- When checking the timing device travel and feed pump pressure, apply charge-air pressure of 590 - 610 mmHg to the charge-air pressure chamber.
- SETTING MICROSWITCH
  - 1. Position control lever so that the distance between the lever and the idle stop screw equals

 $6.0 \pm 0.4 \text{ mm}$ 

(control lever angle: 13° - 15°) and lock lever into place.

- 2. Choose the mounting position of the microswitch so that it is switched to OFF.
- SETTING THE V-FICD (set when W-KSB is loosened)
  - 1) Setting installation position of V-FICD.
    - 1. Lock control lever in the idle position.
    - 2. Set V-FICD bracket in such a way that the gap dimension "S" between the box rod and the pin pressed into the control lever equals 1+1 mm.
  - 2) Setting V-FICD travel
    - 1. Keep control lever in idle position.
    - 2. Apply vacuum of 400 mmHg to interior of vacuum control unit.
    - 3. Check whether the V-FICD consumer-shaft makes the whole stroke.

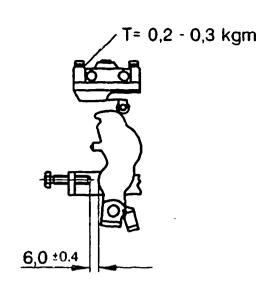
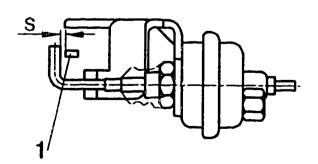


Fig. 6

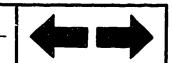
Fig. 7

**ZEXEL-Distributor pumps** 

l = control lever







Test oil: ISO 4113 od SAE J967d

ZEXEL - Test values

Distributor pumps Engine: #JB1CDT

1/2 BOSCH no. 9 460 610 316 104741-1752 DKKC no. 15.4.1988 Date: Company: ISUZU

Injection pump no. 104641-1742 (NP-VE4/11F1900RNP578)
Direction of rotation: rear end side clockwise

No: 894475 1624

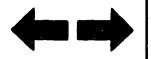
1. Setting values	Speed min-1	<u>e holder combination: 1 688 901</u>   Setting values		Difference
<ul> <li>1-1 Timing device travel</li> <li>1-2 Feed pump pressure</li> <li>1-3 Full load delivery without charge- air pressure</li> </ul>	1700 1700 1250	5,0 - 5,4 (mm) 5,2 - 5,6 (kg/cm <sup>2</sup> )	590 - 610 590 - 610	
Full load delivery with charge-air pressure  1-4 Low-idle speed regulation 1-5 Start 1-6 Maximum speed regulation 1-7 Load-dependent start of delivery 1-8	900 385 100 2300	63, 2 - 64, 2 (cc/1000 strokes) 50, 9 - 51, 9 (cc/1000 strokes) 3, 1 - 7, 1 (cc/1000 strokes) 60, 0 -100, 0 (cc/1000 strokes) 19, 3 - 25, 4 (cc/1000 strokes)	340 - 360 0 0	3, 5 4, 5 2, 0 4, 5

2. 1	<u>est values</u>						
2-1	Timing device	Pulling electro-	ON 500	OFF	1450	1700	1850
		N = min-1 MM	over 0,5		2,1-2,9	4, 9-5, 5	5.8-6.5
2-2	Feed pump	$N = \min_{n=1}^{\infty}$	500	500	1450	1700	1850
*********		kg/cm <sup>2</sup>	4.0-6.0	over 0.8	4, 3-4, 9	5.2-5.6	5.6-6.2
2-3	Overflow rate	N = min-1		1700			<u> </u>
<del></del>		cc/10s		73 - 150			

	cc/10	)s   73 - 1	150	j
2-4 Delivery rates				
Control lever position	Speed   min-1	Delivery rate (cc/1000 strokes)	Charge-air pressure	Difference (cc)
End stop	1250 600 750 900 1800 2300 2500	62,7 - 64,7 33,1 - 41,1 38,7 - 42,7 50,4 - 52,4 54,6 - 61,6 18,8 - 25,8 below 5,0	590 - 610 90 - 110 170 - 180 340 - 360 590 - 610 590 - 610 590 - 610	
Shut-off	385	0	0	
Idle stop	385	3,1 - 7,1 below 3,0	0	
2-5 Magnet	Cut-in Test vo	voltage max.8 V ltage 12 - 14 V	·	

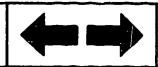
<u>3. Dime</u>	ensions	
K KF MS LDA	0,8 - 1,0 4,4 - 4,6	mm
α	of control le 14,0 - 22,0	angle
A	11,3 - 14,7 32,0 - 42,0	
β B	10, 1 - 13, 6	•
Ϋ́ Υ	-	angle mm

000	Test values
C 20	ZEXEL-Distributor pumps



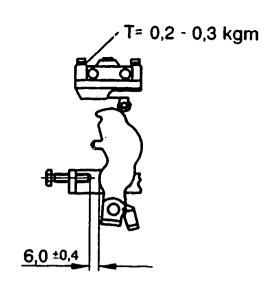
Test values

ZEXEL-Distributor pumps



#### Note:

- After setting the full-load at 1250/min, adjust the full-load from 900/min and the accelerator pressure from 340 - 360 mmHg, and then set the injection quantity with the accelerator compensator-adjustment screw.
- The pulling electromagnet is not defined as ON or OFF. All specifications here correspond to OFF.
- When checking the timing device travel and feed pump pressure, apply charge-air pressure of 590 - 610 mmHg to the charge-air pressure chamber.

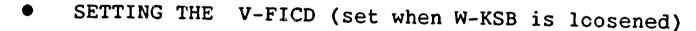


SETTING MICROSWITCH

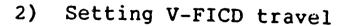
1. Position control lever so that the distance between the lever and the idle stop screw equals  $6.0 \pm 0.4 \text{ mm}$ 

(control lever angle: 13° - 15°) and lock lever into place.

2. Choose the mounting position of the microswitch so that it is switched to OFF.



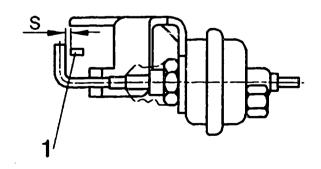
- 1) Setting installation position of V-FICD.
  - 1. Lock control lever in the idle position.
  - 2. Set V-FICD bracket in such a way that the gap dimension "S" between the box rod and the pin pressed into the control lever equals 1+1 mm.



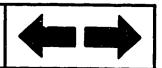
- 1. Keep control lever in idle position.
- 2. Apply vacuum of 400 mmHg to interior of vacuum control unit.
- 3. Check whether the V-FICD consumer-shaft makes the whole stroke.



Fig. 9 1 = control lever

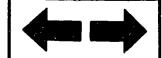


Test values



**C23** 

Test values ZEXEL-Distributor pumps



Test oil: ISO 4113 od SAE J967d

ZEXEL - Test values

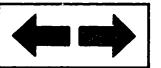
Distributor pumps Engine: RF

1/4 BOSCH no. 9 460 610 304 DKKC no. 104748-0135 Date: 15.4.1988 MAZDA (0)

						Company: MAZDA
Injection pump no. 104648-0135			F2325RNP205)			No: RF01 13 800E
Direction of rotation: rear end	l side clockwi					
Prestroke setting: - mm		<u>Test-nozzl</u>	<u>e holder combi</u>	nation: 1 688 901	000 Test	pressure line: 1 680 750 017
1. Setting value	\$	Speed	Setting valu	es	Charge - air	
		min-l				ar (mmHq) (cc)
1-1  Timing device travel		1375	4,5 - 4,9	(mm)		
1-2   Feed pump pressure		1 3 7 5	4,4 - 5,0	$(kq/cm^2)$		
1-3  Full load delivery withou	it charge-					ļ
air pressure	-	1375	35.6 - 36.6	(cc/1000 strokes)		2,5
Full load delivery with o	harge-air					ŕ
pressure	•			(cc/1000 strokes)	ļ	
1-4 Low-idle speed regulation		350	6,0 - 10,0	(cc/1000 strokes)		2,0
1-5 Start		100	over 42,0	(cc/1000 strokes)		,
1-6   Maximum speed regulation		2500	19,1 - 23,1	(cc/1000 strokes)		
1-7 Load-dependent start of (	lelivery	1375	3,9 - 4,3	(mm)		
1-8						
2. Test values			<b>*</b>		<del> </del>	
2-1 Timing device	$N = \min_{n=1}^{\infty}$	137	5 1750	2325		
	n	nm 4,4-	5,0 6,1 - 7,	3 7,2 - 8,4		
2-2 Feed pump	$N = \min_{n=1}^{\infty}$	500	0 1375	2325	3. Dim	ensions
	kq/c	<u> </u>		0 7,0-7,6	<u> </u>	1
2-3 Overflow rate	$N = \min_{n=1}^{\infty}$			<del></del>	-	
	cc/10		T T T T T T T T T T T T T T T T T T T		l k	3,2 - 3,4 mm
2-4 Delivery rates			<u> </u>		- KF	5,7 - 5,9 mm
Control lever position   S	peed   Deliv	ery rate	Charge-air n	ressure Difference	<b></b> :	1,4 - 1,6 mm
·			) bar (mmHq)	(cc)	LDA	_
End stop		1 - 37,1	137			of control lever
		0 - 32,0			α	26,0 - 34,0 angle
	<del>_</del>	2 - 34,2			Ā	4.0 - 9.5 mm
1		1 - 24, 1			β	40,0 - 50,0 angle
		ow 4, 0			l R	12,5 - 15,8 mm
Shut-off	350	0			-    <del>-</del> Y	- angle
Idle stop		0 - 10,0			-    c	- mm
	<b>I</b>	ow 4,0	1			
			1		-	
2-5	ut-in voltage	max. 8 V	<del></del>		-	
Magnet 1		12 - 14 V			1 1	

Test values	
ZEXEL-Distributor pumps	





#### 1. To set

(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

Pump speed:

1375

/min

Injection quantity:

 $28, 2 \pm 1$  cm<sup>3</sup>/1000 strokes

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1 / 4).

# 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

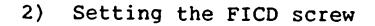
Position of control lever			Prescribed va	ılues
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1375	28,2 <u>+</u> 1,5	-	4, 1 <u>+</u> 0, 3	-
1375	16,1 <u>+</u> 1,5	-	2,9 <u>+</u> 0,7	-

**D4** 

Test values

ZEXEL-Distributor pumps

- Setting the M-KSB stop
  - 1. Fix M-KSB unit temporarily to pump casing.
  - 2. Crank drive shaft at least twice in the direction of rotation of the pump.
  - 3. Crank drive shaft slowly, and lock into position at the point where resistance is felt (roller in the bracket is now laying against the disc cam).
  - 4. Rotate KSB lever in direction of adjustment.
  - 5. Hold KSB lever at the position in which the knuckle bolts are just touching the head of the shaft of the roller bracket (roller bracket - advance angle "0").
  - 6. Set stop in such a way that the gap dimension between the KSB lever and the stop equals 0.5 + 2 mm.
  - 7. After setting, tighten the fixing screw with the torque prescribed for M-KSB T = 0.6 - 0.9 kpm.



104748-0135 4/4

- 1. Turn KSB lever the other way until it touches the stop.
- 2. Insert guage block (feeler gauge)  $4.8 \pm 0.1 \text{ mm}$

between control lever and idle stop screw (distance from idle position 7°).

3. Set FICD screw in such a way that the control lever and the FICD screw are touching.

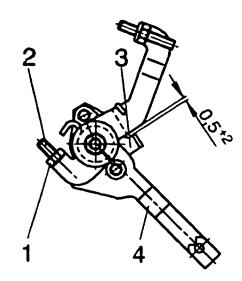


Fig. 10

l = nut

2 = adjustment screw

3 = stop

4 = KSB lever

Fig. 11

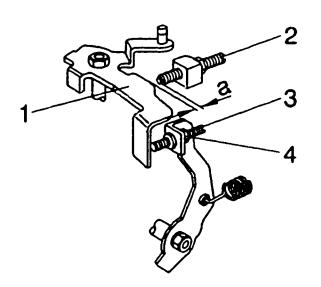
1 = control lever

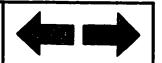
2 = idle stop screw

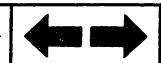
3 = FICD screw

4 = nut

a = gauge block







Distributor pumps

Engine: RF

1/5 BOSCH no. 9 460 610 305 DKKC no. 104748-0145 Date: 15.4.1988 (0)

MAZDA Company: No: RF02 13 800E

Injection pump no. 104648-0145 (N

(NP-VE4/8F2325RNP206)

	roke setting: - mm	<u>Test-nozz</u>	<u>le holder combination: 1 688 901</u>	000 Test pressure	<u>line: 1 680 750 017</u>
1.	Setting values	Speed min-1	Setting values	Charge - air pressure - bar (mmHq)	Difference (cc)
1-1	Timing device travel	1375	4,5 - 4,9 (mm)		
1-2	Feed pump pressure	1375	4,4 - 5,0 (kg/cm <sup>2</sup> )	1	
	Full load delivery without charge-		(1.9, 6,)		
	air pressure	1375	35,6 - 36,6 (cc/1000 strokes)		2,5
	Full load delivery with charge-air				
	pressure	İ	(cc/1000 strokes)	)	
1-4	Low-idle speed regulation	350	6,0 - 10,0 (cc/1000 strokes)		2,0
1-5	Start	100	over 42,0 (cc/1000 strokes)	) <del> </del>	İ
1-6	Maximum speed regulation	2500	19,1 - 23,1 (cc/1000 strokes)		
	Load-dependent start of delivery	1375	3,9 - 4,3 (mm)		
1-8	· · · · · · · · · · · · · · · · · · ·		()	1	

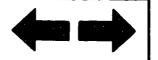
2-1 Timing device	N = min-1	1375	1750	2325
	mm	4,4-5,0	6,1 - 7,3	7,2 - 8,4
2-2 Feed pump	N = min-1 kg/cm <sup>2</sup>	500 1,9 - 2,5	1375 4,4 - 5,0	2325 7.0 - 7.6
2-3 Overflow rate	N = min-1 cc/10s	1375 46, 3 - 90, 3		

		cc/10s 46.3 - 9	90. 3	
2-4 Delivery rates			20141	
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air pr	essure Difference
End stop	1375 500 2325 2500 2750	35,1 - 37,1 28,0 - 32,0 30,2 - 34,2 18,1 - 24,1 below 4,0	our (maning)	
Shut-off	350	0		
Idle stop	350 450	6,0 - 10,0 below 4,0		
2-5 Magnet		voltage max. 8 V ltage 12 - 14 V	<del></del>	

3. Dime	ensions	
K	3, 2 - 3, 4	mm
KF	5,7 - 5,9	
MS	1,4 - 1,6	mm
LDA	~	
Angle o	of control le	ver
α	26,0 - 34,0	angle
<u>A</u>	4.0 - 9.5	_mm
β	40,0 - 50,0	angle
<u>B</u>	12,5 - 15,8	mm
Υ	-	angle
_C	-	mm

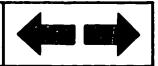
Test values

ZEXEL-Distributor pumps



**D8** 

Test values ZEXEL-Distributor pumps



### 1. To set

(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

Pump speed:

1375

/min

Injection quantity:

 $28,2 \pm 1$  cm<sup>3</sup>/1000 strokes

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1/5)

## 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Pos	sition of control lever	Prescribed values			
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)	
1375	28, 2 <u>+</u> 1, 5	-	4,1 + 0,3	_	
1375	16,1 <u>+</u> 1,5	-	2,9 <u>+</u> 0,7	-	

D 10

- 1) Setting the M-KSB stop
  - 1. Fix M-KSB unit temporarily to pump casing.
  - 2. Crank drive shaft at least twice in the direction of rotation of the pump.
  - 3. Crank drive shaft slowly, and lock into position at the point where resistance is felt (roller in the bracket is now laying against the disc cam).
  - 4. Rotate KSB lever in direction of adjustment.
  - 5. Hold KSB lever at the position in which the knuckle bolts are just touching the head of the shaft of the roller bracket (roller bracket advance angle "0").
  - 6. Set stop in such a way that the gap dimension between the KSB lever and the stop equals

    0.5 + 2 mm.
  - 7. After setting, tighten the fixing screw with the torque prescribed for M-KSB T = 0.6 0.9 kpm.

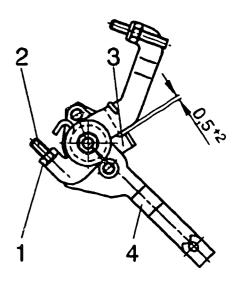


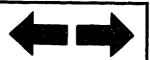
Fig. 12

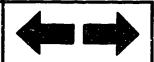
1 = nut

2 = adjustment screw

3 = stop

4 = KSB lever





- 1. Turn KSB lever the other way until it touches the stop.
- 2. Insert gauge block (feeler gauge)

$$4.8 \pm 0.1 \, \text{mm}$$

between control lever and idle stop screw (distance from idle position 7°).

3. Set FICD screw so that the control lever and the FICD screw are touching.



1. Position control lever so that the distance between the lever and the idle stop screw equals

$$8.5 \pm 1 \text{ mm}$$

(control lever angle: 12.5°) and lock lever into place.

2. Set adjustment screw so that the microswitch is switched to ON.

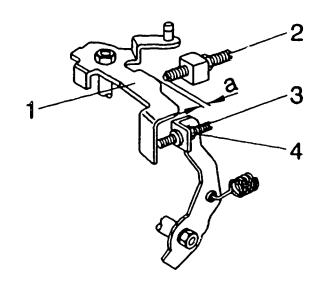


Fig. 13

1 = control lever

2 = idle stop screw

3 = FICD screw

4 = nut

a = gauge block

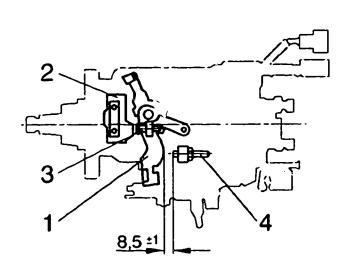
#### Fig. 14

1 = control lever

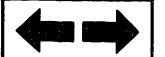
2 = microswitch

3 = adjustment screw

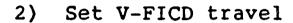
4 = idle stop screw



D13



- 1) Set installation location of V-FICD
  - 1. Stop control lever in the idle position.
  - 2. Set vacuum unit support so that the gap dimension between control lever roller and support bracket equals



- 1. Move V-FICD across entire operating travel distance.
- 2. Set the gap dimension between the control lever and the idle stop screw on the adjustment screw at

$$3.4 \pm 1$$
 mm.

## • SETTING INSTALLATION LOCATION OF FICD

Set bracket in such a way that gap dimension between the control lever and the FICD bracket equals more than 3 mm.

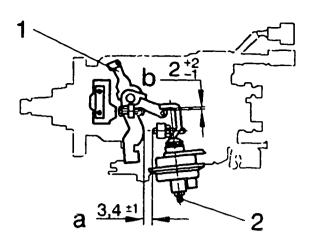


Fig. 15

l = control lever

2 = adjustment screw

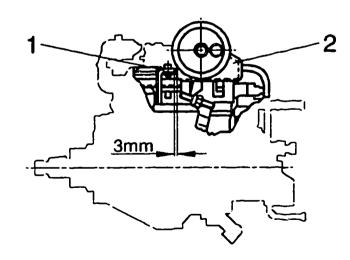
a = from idle position

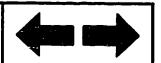
b = gap dimension inside

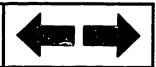
Fig. 16

l = control lever

2 = FICD bracket







|Test oil: ISO 4113 oc SAE J967d

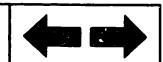
ZEXEL - Test values

Distributor pumps Engine: R2

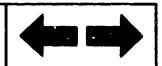
1/4 BOSCH no. 9 460 610 306 DKKC no. 104748-0154 Date: 15.4.1988 (0) Company: MAZDA

Injection pump no. 104648-			F2125RNP207)	No:	R201 13 800D
Direction of rotation: rear	end side clo	· · · · · · · · ·			
Prestroke setting: - mm		Test-nozz	le holder combination: 1 688 90		
1. Setting val	u e s	Speed	Setting values	Charge - air	Difference
1-1  Timing device travel		min-1 1250	2 2 - 2 7 (mm)	pressure - bar (mmHg)	) (cc)
1-2 Feed pump pressure		1250	3,3 - 3,7 (mm) 4,9 - 5,5 (kg/cm <sup>2</sup> )		Į
1-3 Full load delivery wi	thout charge-		4,3 3,3 (kg/ciii-)		1
air pressure	•	1500	38,2 - 39,2 (cc/1000 strokes		2 5
Full load delivery wi	th charge-air	r			2,5
pressure	. •		(cc/1000 strokes		1
1-4   Low-idle speed regula	tion	350	6,0 - 10,0 (cc/1000 strokes		2,0
<pre>1-5   Start 1-6   Maximum speed regulat</pre>	ion	100	over 42,0 (cc/1000 strokes	1	
1-7 Load-dependent start		2400	11,1 - 15,1 (cc/1000 strokes	)	
1-8	or derivery	1250	$2,7 \pm 0,2 \text{ (mm)}$		
2. Test values			<del></del>		
2-1 Timing device	N = n	nin-l   1250	1500 2125		
		<u>mm</u> 3, 2 -	3,8 4,1 - 5,3 7,0 - 8,2		
2-2 Feed pump	N = n			3. Dimensions	
2.2 Overflow rate			3, 3 4, 9 - 5, 5 7, 3 - 7, 9		
2-3 Overflow rate	l l	nin-l 1250 cc/10s 49,7 -			
2-4 Delivery rates		c/10s   49,7 -	93, 7	_   K   3,2 - 5,7 -	
Control lever position	Speed   C	elivery rate	Charge-air pressure Differen	<del></del>	
•		cc/1000 strokes	bar (mmHq) (cc)	LDA -	mm
End stop	1500	37,7 - 39,7	, see ,	Angle of contro	
	500	30, 7 - 34, 7			32,0 angle
	2125	32, 0 - 36, 0		A   5,4-	8,2 mm
		10,1 - 16,1		β 40,0-	50,0 angle
Shut-off	2550 350	below 4,0	<del></del>		15,8 mm
Idle stop	350	0 6,0 - 10,0		_ Y	angle
· · · · · · · · · · · · · · · · · · ·					mm
2-5 Magnet	Cut-in vol	tage max. 8 V		_	
Magnet	<u>lest volta</u>	ge 12 - 14 V			

Test values			
ZEXEL-Distributor	pu	mp	S







### 1. To set

(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

Pump speed:

1250

/min

Injection quantity:

 $28,2 \pm 1 \text{ cm}^3/1000 \text{ strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1/4).

## 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Po	sition of control lever	Prescribed values			
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)	
1250	28,2 ± 1,5	-	2,7 + 0,3	-	
1250	18,1 + 1,5	-	1,5 + 0,7	-	

Test values

- 1) Setting the M-KSB stop
  - 1. Fix M-KSB unit temporarily to pump casing.
  - 2. Crank drive shaft at least twice in the direction of rotation of the pump.
  - 3. Crank drive shaft slowly, and lock into position at the point where resistance is felt (roller in the bracket is now laying against the disc cam).
  - 4. Rotate KSB lever in direction of adjustment.
  - 5. Hold KSB lever at the position in which the knuckle bolts are just touching the head of the shaft of the roller bracket (roller bracket advance angle "0").
  - 6. Set stop in such a way that the gap dimension between the KSB lever and the stop equals

    0.5 + 2 mm.
  - 7. After setting, tighten the fixing screw with the torque prescribed for M-KSB T = 0.6 0.9 kpm.

104748-0154 4/4

- 2) Setting the FICD screw
  - 1. Turn KSB lever the other way until it touches the stop.
  - 2. Insert guage block (feeler gauge)

4.8  $\pm$  1 mm between control lever and idle stop screw (distance from idle position 7°).

3. Set FICD screw in such a way that the control lever and the FICD screw are touching.

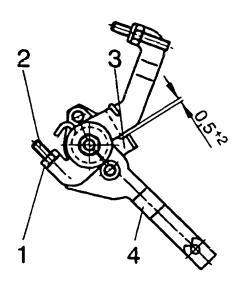


Fig. 17 1 = nut

2 = adjustment screw

3 = stop

4 = KSB lever

Fig. 18

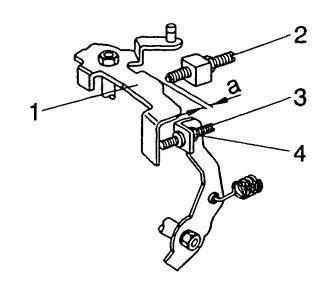
1 = control lever

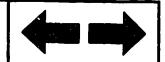
2 = idle stop screw

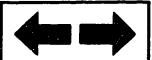
3 = FICD screw

4 = nut

a = gauge block







ZEXEL - Test values

Distributor pumps Engine: R2

1/6 BOSCH no. 9 460 610 307 DKKC no. 104748-0164 Date: 15.4.1988 (0)

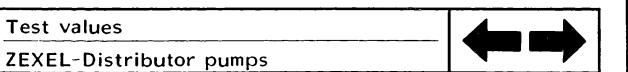
MAZDA Company:

Injection numb no 104648-0164 (ND-1/E/I/QE2125DND200)

<u> Injection pump no. 104648-</u>	0164	(NP-VE4/8F	F2125RNP208)				No:	R202 13 800D
Direction of rotation: rea		se						
Prestroke setting: - mm		Test-nozzl	e holder comb	ination: 1	688 901	000 Test	pressure	line: 1 680 750 017
1. Setting val	ues	Speed	Setting valu			Charge - a		Difference
		min-1				pressure -	bar (mmHq)	
1-1  Timing device travel		1250	3, 3 - 3, 7	(mm)				
1-2 Feed pump pressure		1250	4,9 - 5,5	$(kg/cm^2)$				
1-3  Full load delivery w	ithout charge-							i
air pressure	• . • . •	1500	38, 2 - 39, 2	(cc/1000	strokes)			2,5
Full load delivery w	ith charge-air							
pressure	A 6	1		(cc/1000	strokes)			
1-4   Low-idle speed regula	ation	350	6,0 - 10,0	(cc/1000	strokes)			2,0
1-5  Start		100	over 42,0					
1-6   Maximum speed regula		2400	11,1 - 15,1		strokes)			
1-7   Load-dependent start	of delivery	1250	2,7 + 0,2	(mm)				
1-8	<del></del>		<del></del>				<del></del>	
2. Test values	1 41 -2- 2	1 1050				····		
2-1 Timing device	N = min-1			2125				
2-2 Feed pump	N = min-1		8 4,1-5,3 7,0 1250		125		•	
2-2 reed pump		_ i .	3 4,9-5,5 5,			<u>  3. U'</u>	mensions	
2-3 Overflow rate	N = min-1		المراجع والمراجع	0 0,2 7,3	7, 3	-		
	cc/10					K	3 2 -	3,4 mm
2-4 Delivery rates		3 143,7	33, 1			KF	5,7 -	
Control lever position	Speed   Deliv	ery rate	Charge-air	recural	ifference	-1 1 1	1,4-	******
	min-1 (cc/1	000 strokes	) bar (mmHq)		cc)	LDA		mm
End stop		- 39,7	7 July Villing		<u> </u>		of contro	
·		- 34,7				α	1 28.0 - 3	32,0 angle
	1	- 36, 0				I Ā	5.4 -	8,2 mm
	1 '	- 16, 1				β		50,0 angle
	1 1 1	w 4,0	<b> </b>			B	12,5 -	15,8 mm
Shut-off	350	0				Y	-	angle
Idle stop		- 10,0		<del></del>			-	mm
				Ì			•	
2-5	Cut-in voltage	max. 8 V						

Test values	
ZEXEL-Distributor pumps	

Test voltage 12 - 14 V



Magnet

#### 1. To set

(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

Pump speed:

1250

/min

Injection quantity:

 $28,2 \pm 1 \text{ cm}^3/1000 \text{ strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated.

2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

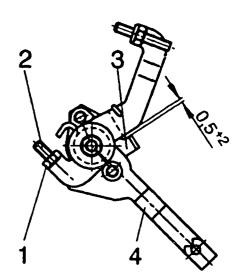
Pos	sition of control lever	Prescribed values			
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)	
1250	28,2 <u>+</u> 1,5	-	2,7 <u>+</u> 0,3	-	
1250	18,1 + 1,5	-	1,5 <u>+</u> 0,7	-	

**E4** 



Test values

- MOUNTING AND SETTING M-KSB
- 1) Setting the M-KSB stop
  - 1. Fix M-KSB unit temporarily to pump casing.
  - 2. Crank drive shaft at least twice in the direction of rotation of the pump.
  - 3. Crank drive shaft slowly, and lock into position at the point where resistance is felt (roller in the bracket is now laying against the disc cam).
  - 4. Rotate KSB lever in direction of adjustment.
  - 5. Hold KSB lever at the position in which the knuckle bolts are just touching the head of the shaft of the roller bracket (roller bracket - advance angle "0").
  - 6. Set stop in such a way that the gap dimension between the KSB lever and the stop equals  $0.5 + 2 \, \text{mm}$
  - 7. After setting, tighten the fixing screw with the torque prescribed for M-KSB T = 0.6 - 0.9 kpm.



1 = nut2 = adjustment screw 3 = stop4 = KSB lever

Fig. 20

Fig. 19

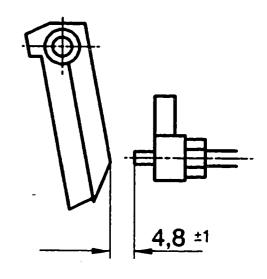
104748-0164 4/6 2) Setting the FICD screw

- 1. Turn KSB lever the other way until it touches the stop.
- 2. Insert guage block (feeler gauge)

$$4.8 \pm 1 \text{ mm}$$

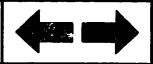
between control lever and idle stop screw (distance from idle position 7°).

3. Set FICD screw in such a way that the control lever and the FICD screw are touching.









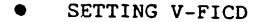
### • SETTING MICROSWITCH

1. Position control lever so that the distance between the lever and the idle stop screw equals

$$8.5 \pm 1 \text{ mm}$$

(control lever angle: 12.5°) and lock lever into place.

2. Set adjustment screw so that the microswitch is switched to ON.



- 1) Set installation location of V-FICD
  - 1. Stop control lever in the idle position.
  - 2. Set vacuum unit support so that the gap dimension between control lever roller and support bracket equals

$$2^{+2}_{+1}$$
 mm.

- 2) Set V-FICD travel
  - 1. Move V-FICD across entire operating travel distance.
  - 2. Set the gap dimension between the control lever and the idle stop screw on the adjustment screw at

$$3.4 \pm 1$$
 mm.

(Control lever angle: 5°)

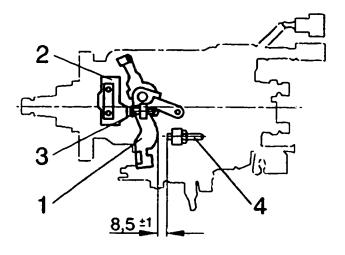


Fig. 21

1 = control lever

2 = microswitch

3 = adjustment screw

4 = idle-stop screw

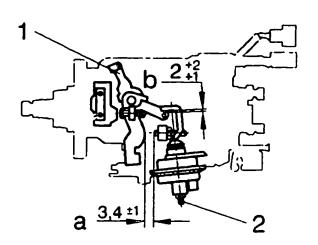
Fig. 22

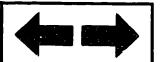
1 = control lever

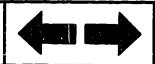
2 = adjustment screw

a = from idle position

b = gap dimension inside







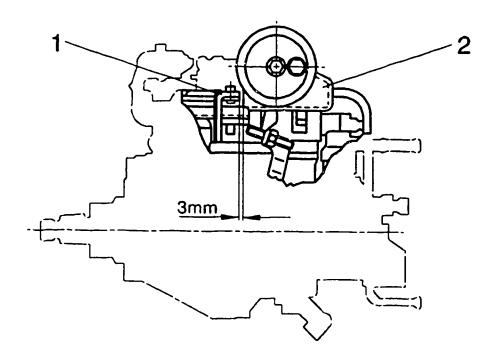


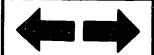
Fig. 23

104748-0164 6/6

1 = control lever
2 = FICD bracket

## • SETTING INSTALLATION LOCATION OF FICD

Set bracket in such a way that gap dimension between the control lever and the FICD bracket equals more than 3 mm.



Test oil: ISO 4113 od SAE J967d ZEXEL - Test values

Distributor pumps Engine: R2

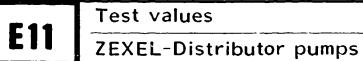
BOSCH no. 9 460 610 308 DKKC no. 104748-0183 15.4.1988 Date: (0) Company: MAZDA

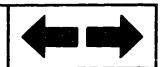
Inication number 100000	102		ND 1/5 :: / 5	204.055.155.155.155					<u>Compa</u>	ny: MAZDA	·
Injection pump no. 104648-01			NP-VE4/8F	2125RNP247)					No:	R209 13 8	00D
Direction of rotation: rear	ena siae	CIOCKWIS	=								
Prestroke setting: - mm			Test-nozzi	<u>e holder comb</u>	<u> ination:</u>	<u>1 688 901</u>	000	Test p	ressure	<u>line: 1 680 75</u>	0 017
1. Setting valu	ı e s		Speed	Setting val	lues		Charge		_	Difference	
			<u>min-l</u>				pressur	<u>e – ba</u>	r (mmHq)		
1-1  Timing device travel		1	1250	3, 3 - 3, 7	(mm)						
1-2   Feed pump pressure			1250	4,9 - 5,5							
1-3  Full load delivery wit	hout cha	rge-									
air pressure			1500	38, 2 - 39, 2	(cc/1000	strokes)				2,5	
Full load delivery wit	:h charge	-air								2,3	
pressure		ļ			(cc/1000	strokes)	Ì				
1-4  Low-idle speed regulat	ion	1	350	6,0 - 10,0						2,0	
1-5  Start		ļ	100	over 42,0						1 2,0	
1-6   Maximum speed regulati	on		2400	11,1 - 15,1							
1-7   Load-dependent start o	of delive	ry	1250	2,7 + 0,2						}	
1-8											
2. Test values							<del> </del>	·	`	<del></del>	<del></del>
2-1 Timing device	N	= min-l	1250	1500	212	5				· · · · · · · · · · · · · · · · · · ·	
		<b>m</b> m	3,2 - 3	3,8 $4,1-5,$	3 7,0 - 8	8, 2					
2-2 Feed pump	N	= min-l	500					. Dime	nsions_		
		kq/cm		3, 3, 4, 9 - 5,				İ		<del></del>	
2-3 Overflow rate	N	= min-1	1250				-				
		<u>cc/10s</u>	49,7-9	3, 7			_   K	: 1	3,2 -	3,4 mm	
2-4 Delivery rates	·							F	5,7 -		
Control lever position	Speed	Delive	ry rate	Charge-air	pressurell	Difference		is I	1,4-		
	min-1	(cc/10	00 strokes	) bar (mmHq)		(cc)	· 1 1	DA	•	mm	
End stop	1500	37,7	- 39,7				-, ,—		f contro		
	500		- 34,7							2,0 angle	
	2125		- 36,0						5,4-	8,2 mm	
	2400		- 16,1				l G		40.0 - 5	0,0 angle	
	2550		4,0	1	İ				12,5 - 1	5.8 mm	
Shut-off	350		0					-	-	angle	
Idle stop	350		- 10,0				ا ا أ		-	mm	
			- <b></b>	1				<del>`</del>	· · · · · · · · · · · · · · · · · · ·	11911	
			· · · · · · · · · · · · · · · · · · ·				-				
2-5	Cut-in	voltage	max. 8 V	+			-				
Magnet	Test v	oltage 12	- 14 V								
					<del></del>		<del></del>		<del></del> _	<del></del>	

Test values	
ZEXEL-Distributor pumps	`

E10







### 1. To set

(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

Pump speed:

1250

/min

Injection quantity:

 $28, 2 \pm 1 \text{ cm}^3/1000 \text{ strokes}$ 

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1 / 4).

### 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Pos	ition of control lever	Prescribed values			
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)	
1250	28, 2 <u>+</u> 1, 5	-	2,7 + 0,3	-	
1250	18,1 <u>+</u> 1,5	_	1,5 <u>+</u> 0,7	-	

E13

Test values

**ZEXEL-Distributor pumps** 

- 1) Setting the M-KSB stop
  - 1. Fix M-KSB unit temporarily to pump casing.
  - 2. Crank drive shaft at least twice in the direction of rotation of the pump.
  - 3. Crank drive shaft slowly, and lock into position at the point where resistance is felt (roller in the bracket is now laying against the disc cam).
  - 4. Rotate KSB lever in direction of adjustment.
  - 5. Hold KSB lever at the position in which the knuckle bolts are just touching the head of the shaft of the roller bracket (roller bracket advance angle "0").
  - 6. Set stop in such a way that the gap dimension between the KSB lever and the stop equals 0.5 + 2 mm.
  - 7. After setting, tighten the fixing screw with the torque prescribed for M-KSB T = 0.6 0.9 kpm.
- 2) Setting the FICD screw
  1. Turn KSB lever the other way until it touches the stop.
  - 2. Insert guage block (feeler gauge)

4.8 + 1 mm

between control lever and idle stop screw (distance from idle position 7°).

3. Set FICD screw in such a way that the control lever and the FICD screw are touching.

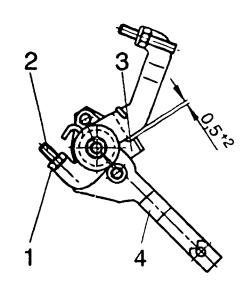


Fig. 24 1 = nut

2 = adjustment screw

3 = stop

4 = KSB lever

Fig. 25

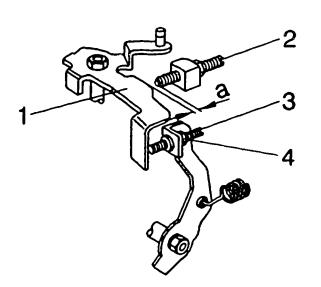
1 = control lever

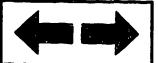
2 = idle stop screw

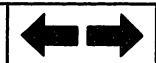
3 = FICD screw

4 = nut

a = gauge block







Test oil: ISO 4113 od SAE 3967d

ZEXEL - Test values

Distributor pumps

Engine: RF

1/4 BOSCH no. 9 460 610 311 DKKC no. 104748-0344 Date: 15.4.1988

MAZDA Company:

RF79 13 800B No:

Injection pump no. 104648-0354 (NP-VE4/8F2325RNP580)

Direction of rotation: rear end side clockwise

	Setting values	Speed min-1	Setting values		line: 1 680 750 0  Difference  (cc)
-1	Timing device travel	1375	4,0 - 4,4 (mm)	The state of the s	
-2	Feed pump pressure	1375	4,4 - 5,0 (kg/cm <sup>2</sup>		
-3	Full load delivery without charge-		, , , , , , , , , , , , , , , , , , ,		
	air pressure	1375	35,4 - 36,4 (cc/1000 strokes)		2,5
	Full load delivery with charge-air		(6671000 3610063		2,3
	pressure		(cc/1000 strokes)		
-4	Low-idle speed regulation	360	9,0 - 11,0 (cc/1000 strokes)		2,0
	Start	100	over 42,0 (cc/1000 strokes)		2,0
-6	Maximum speed regulation	2600	10,8 - 14,8 (cc/1000 strokes)		
-7	Load-dependent start of delivery	1375	3, 4 - 3, 8 (mm)		
-8_			()		

9 T A A B			
2. Test values			
2-1 Timing device	N = min-1	1375 1800	2325
	mm	3, 9-4, 5 6, 1-7, 3	7.2-8.4
2-2 Feed pump	N = min-1 60		2325
	kg/cm <sup>2</sup> 2, 2-	2,8 4,4-5,0 5,6-6,2	6, 9-7, 5
2-3 Overflow rate	N = min-1	1375	

E-3 Overrion rate	1	N = MIN-1	ł	13/5		
	i	cc/10s	l	46, 3-90, 3		
2-4 Delivery rates			<del></del>		· · · · · · · · · · · · · · · · · · ·	<del></del>
Control lever position	Speed min-1		rate	Charge-air	pressure	
End stop	1375	34, 9 - 29, 0 -	36, 9	bar (mmHg)		(cc)
	2325 2600	30,2 - 9,8 -	34, 2			
	2700	below	~			
Shut-off	360	0	<del></del>			
Idle stop	360	8,0 -	12,0			
2-5	Cut-i	n voltage max	c. 8 V			

Cut-in voltage max. 8 V

Test voltage 12 - 14 V

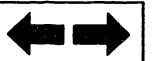
<u>3. Dim</u>	ensions	
K KF MS LDA	3, 2 - 3, 4 5, 7 - 5, 9 1, 4 - 1, 6	mm mm
	of control le	
α Α	21,0 - 29,0	•
	8.8 - 14.1	_mm
β B	40,0 - 50,0 12,7 - 16,0	
Υ	- 10,0	angle
Č	-	mm

Test values

Magnet

E 16

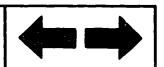
ZEXEL-Distributor pumps



**E17** 

Test values

ZEXEL-Distributor pumps



## 1. To set

(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

mmHg

/min

E19

Pump speed:

1375

Injection quantity:

 $28, 2 \pm 1$  cm<sup>3</sup>/1000 strokes

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1 / 4).

## 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Position of control lever			Prescribed values	
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1375	28, 2 <u>+</u> 1, 5	-	3, 6 <u>+</u> 0, 3	-
1375	16,1 <u>+</u> 1,5	-	2,4 <u>+</u> 0,7	-

- 1. Clamp control lever in idle position.
- Set rod (1) in such a way that the dimension for the pin equals 5.8 0.2 mm (between the side connecting lever and the angle bracket).
   After this, tighten lock nut.

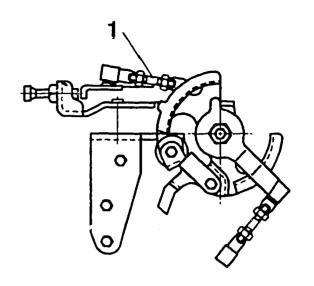
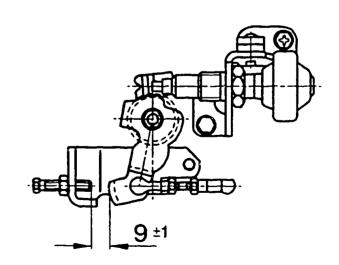


Fig. 26

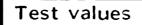
#### • SETTING DAMPER

- Insert gauge block (feeler gauge) 9 ± 1 mm between control lever and idle screw. (Control lever angle: 13°)
- 2. Set damper-adjustment screw in such a way that the damper-adjustment screw and the tappet are touching. Tighten the nut securely.

Fig. 27







**E21** 

- 1. Setting the timing device stroke
  - (1) Calculate the timing device stroke (fig. 29) according to the ambient temperature during adjustment.
  - (2) Set stroke with the timing device stroke-adjustment screw (1), so that it agrees with the calculation (see below).
- 2. Setting W raised idling
  - (1) Adjust the adjustment screw (2) until there is a distance of  $12.3 \pm 0.5$  mm between the control lever and the idle stop screw.
- 3. Setting the control lever angle
  - (1) Calculate the control lever angle (L dimension) as shown in fig. 29, according to the air temperature during adjustment.
  - (2) Adjust the control lever angle ( $\Omega$  dimension) with adjustment screw (3).

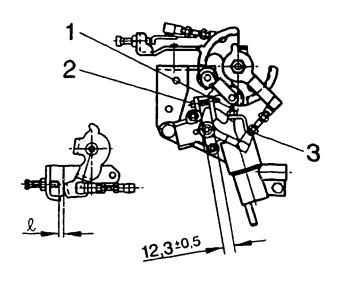


Fig. 28

Fig. 29

a = air temperature (°C)

b = timing device travel (TA) mm

c = gap dimension of control lever/idle-stop screw (0)

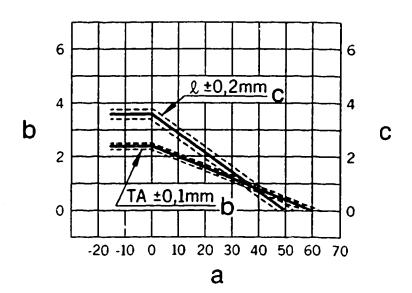
## Calculation formula (Fig. 29)

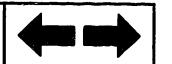
Timing device travel:

 $TA = -0.04 t + 2.4 (t \ge 0^{\circ}C)$ 

Control lever angle:

 $\ell = -0.072 t + 3.6 (t \ge 0^{\circ}C)$ 





1/4 BOSCH no. 9 460 610 309 DKKC no. 104749-0344 Date: 15.4.1988

MAZDA Company:

RF71 13 800C No:

Injection pump no. 104649-0354 (NI Direction of rotation: rear end side clockwise (NP-VE4/9F2150RNP556)

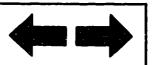
1. S e	tting values	Speed	<u>e holder combination: 1 688 901</u>   Setting values		<u>line: 1 680 750 017</u>  Difference
		<u>  min-1</u>		pressure - bar (mmHq)	l(cc)
1-1  Tir	ming device travel	1500	T=4,4-4,8 (mm)	640 - 660	
1-2   Fee	ed pump pressure	1500	$5,2-5,8 \text{ (kg/cm}^2)$	640 - 660	1
	11 load delivery without charge-		, 3,2 3,0 (kg/cm )		
	r pressure	1000	49,4 - 50,4 (cc/1000 strokes)	640 - 660	4, 0
	ll load delivery with charge-air		43,4 30,4 (cc/1000 strokes)		1,0
	essure	1000	44,3 - 45,3 (cc/1000 strokes)	290 - 310	3,5
	w-idle speed regulation	360			1
1-5   Sta			8,1 - 10,1 (cc/1000 strokes)	0	2,0
		100	over 55,0 (cc/1000 strokes)	0	
1-6   Max	ximum speed regulation	2250	33, 2 - 37, 2 (cc/1000 strokes)	640 - 660	1
1-7   Lo	ad-dependent start of delivery	1500	T-0,2 - 0,6 (mm)	640 - 660	
1-8	•		, , , , , , , , , , , , , , , , , , ,	1	

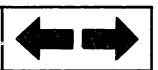
2-1 Timing device	N = min-1	1250 1500 2150	
	mm	2,7 - 3,9 4,3 - 4,9 7,6 - 8,8	
2-2 Feed pump	N = min-1	1250 1500 2150	
	kg/cm <sup>2</sup>	4,5 - 5,1 5,2 - 5,8 6,8 - 7,4	
2-3 Overflow rate	N = min-1	1000	
	cc/10s	41,0 - 85,0	

		<u>cc/10s   41,0 - 8</u>	85,0	i
2-4 Delivery rates				
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air pressure	Difference (cc)
End stop	1000 600 2150 2250 2550 2700 1000	48, 9 - 50, 9 33, 9 - 38, 9 39, 7 - 44, 7 32, 7 - 37, 7 8, 0 - 15, 0 below 3, 6 43, 8 - 45, 8	640 - 660 0 640 - 660 640 - 660 640 - 660 640 - 660 290 - 310	
Shut-off	360	0	0	
Idle stop	450 360	below 3,0 7,6 - 10,6	0 0	
2-5 Magnet		l Oltage max. 8 V tage 12 - 14 V		

3. Dime	ensions	
K KF MS LDA Angle α	3,2 - 3,4 5,7 - 5,9 1,6 - 1,8 3,9 - 4,1 of control le	ណា mm ver
A	8,8 - 14,1	_mm
β	39,0 - 45,0	angle
<u>B</u>	12,0 - 13,9	
Υ	-	angle
_C		_mm

F1





### • Note:

When checking the timing device travel and feed pump pressure, apply charge-air pressure of 640 - 660 mmHg to the charge-air pressure chamber.

#### SETTING LOAD-DEPENDENT START OF DELIVERY

#### 1. To set

(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

640 - 660

mmHg

Pump speed:

1500

/min

Injection quantity:

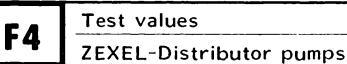
38, 2 + 0, 5

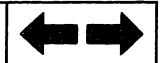
cm<sup>3</sup>/1000 strokes

- (2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1/4).
- 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Pos	sition of control lever	Prescribed va	lues	
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1500	37, 2 - 39, 2	640 - 660	_	0,1 - 0,7
1500	32, 2 - 34, 2	640 - 660	-	0,4 - 1,2





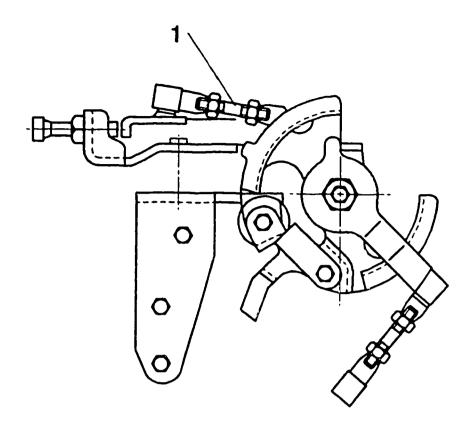


Fig. 30

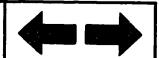
104749-0344 3/4

#### SETTING SIDE CONNECTING LEVER

- 1. Clamp control lever in idle position.
- 2. Set rod (1) in such a way that the dimension for the pin equals

(between the side connecting lever and the angle bracket).

After this, tighten lock nut.



- 1. Setting the timing device stroke
  - (1) Calculate the timing device stroke (fig. 32) according to the ambient temperature during adjustment.
  - (2) Set stroke with the timing device stroke-adjustment screw (1), so that it agrees with the calculation (see below).
- 2. Setting W raised idling
  - (1) Adjust the adjustment screw (2) until there is a distance of  $12.3 \pm 0.5$  mm between the control lever and the idle stop screw.
- 3. Setting the control lever angle
  - (1) Calculate the control lever angle (2 dimension) as shown in fig. 32, according to the air temperature during adjustment.
  - (2) Adjust the control lever angle (1 dimension) with adjustment screw (3).

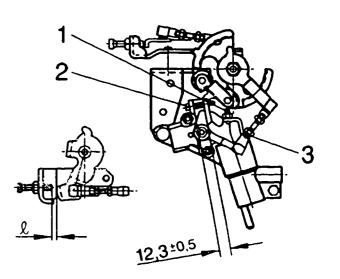


Fig. 31

Fig. 32

a = air temperature (°C)

b = timing device travel (TA) mm

c = gap dimension of control lever/idle-stop screw (1)

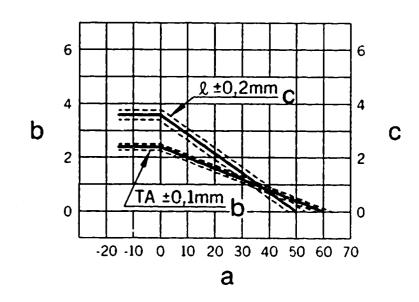


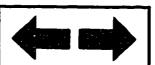
Timing device travel:

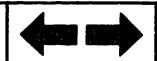
 $TA = -0.04 t + 2.4 (t \ge 0^{\circ}C)$ 

Control lever angle:

 $\ell = -0.072 t + 3.6 (t \ge 0^{\circ}C)$ 







Test oil: ISO 4113 od SAE J967d

ZEXEL - Test values

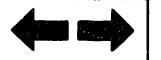
Distributor pumps Engine: RFX

1/4 BOSCH no. 9 460 610 310 DKKC no. 104749-0354 Date: 15.4.1988 MAZDA (0) Company:

• • • • ·		/4.5			Comp	any: MAZDA
Injection pump no. 104649-			2150RNP557)		No:	RF72 13 800D
Direction of rotation: rea		rise			· <del></del>	
restroke setting: 0,28 - 0	), 32 mm		<u>e holder combination:</u>	1 688 901		line: 1 680 750 017
1. Setting val	u e s	Speed	Setting values		Charge - air	Difference
		min-1			pressure - bar (mmHq	) (cc)
1-1  Timing device travel		1500	T = 4, 4 - 4, 8 (mm)		640 - 660	
1-2 Feed pump pressure		1500	5,2 - 5,8 (kg/cm <sup>2</sup>		640 - 660	
1-3   Full load delivery w	ithout charge-					Ì
air pressure	-	1000	49,4 - 50,4 (cc/100	O strokes)	640 - 660	4, 0
Full load delivery w	ith charge-air					
pressure		1000	44,3 - 45,3 (cc/100	O strokes)	290 - 310	3, 5
1-4   Low-idle speed regula	ation	415	11,1 - 13,1 (cc/100	O strokes)	0	2,0
1-5  Start		100	over 55,0 (cc/100	O strokes)	0	
1-6   Maximum speed regula	tion	2250	33, 2 - 37, 2 (cc/100	O strokes)	640 - 660	
1-7   Load-dependent start	of delivery	1500	T-0,2 - 0,6 (mm)		640 - 660	
1-8					ł	
2. Test values						
2-1 Timing device	N = min-	1 1250	1500 21	50		
		mm 2,7 -	3,9 4,3 - 4,9 7,6 -	8,8		
2-2 Feed pump	N = min-	1 1250	1500 21	50	3. Dimensions	
	kq/	cm <sup>2</sup> 4,5 -	5,1 5,2 - 5,8 6,8 -	7,4		
2-3 Overflow rate	N = min-		<del></del>		-	
	cc/1	Os 41,0 -	85,0		_ K 3,2-	3, 4 mm
2-4 Delivery rates						5,9 mm
Control lever position	Speed   Deli	very rate	Charge-air pressure	Differenc	<b>-</b>	1,8 mm
		1000 strokes		(cc)		4,1 mm
End stop		8, 9 - 50, 9	640 - 660		Angle of contr	
		3, 9 - 38, 9	0			29,0 angle
		9,7 - 44,7	640 - 660		A 8,8-	
	2250 3	2,7 - 37,7	640 - 660	1	β 38,0 -	
	• • • • • • • • • • • • • • • • • • •	8,0 - 15,0	640 - 660	į.	B 12.0 -	•
	1	elow 3, 0	640 - 660		Y	angle
Chut 66		3,8 - 45,8	290 - 310	<u> </u>	-1   c   -	mm
Shut-off	415	0	0		_	11411
Idle stop		elow 3, 0	0			
	415 10	0,6 - 13,6	0		_	
2.5	<del></del>		<u> </u>	<u> </u>	-	
2-5 Magnet	Cut-in voltag	•				
Magnet	<u>Test voltage</u>	12 - 14 V			<u> </u>	····

Test values	
ZEXEL-Distributor	pumps

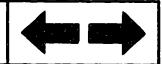
F8



F9

Test values

**ZEXEL-Distributor pumps** 



### • Note:

When checking the timing device travel and feed pump pressure, apply charge-air pressure of 640 - 660 mmHg to the charge-air pressure chamber.

## SETTING LOAD-DEPENDENT START OF DELIVERY

## 1. To set

(1) Stop the control lever at the appropriate spot in accordance with the following conditions.

Charge-air pressure:

640 - 660

mmHg

Pump speed:

1500

/min

Injection quantity:

38, 2 + 0, 5

cm<sup>3</sup>/1000 strokes

(2) When the control lever is in the position specified above (1), adjust the governor sleeve so that the timing device travel is as previously stipulated. (Page 1/4).

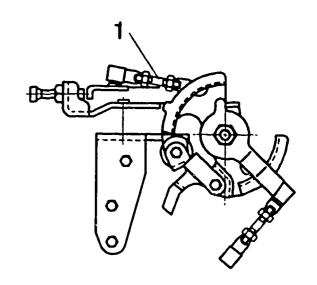
## 2. Checking load-dependent start of delivery

Stop the control lever at the appropriate spot in accordance with the following conditions, and check load-dependent start of delivery.

Position of control lever			Prescribed values	
Pump speed (1/min)	Injection quantity (cm <sup>3</sup> /1000 strokes)	Charge-air pressure (mmHg)	Timing device travel (mm)	Reduction of timing device travel (mm)
1500	37,2 - 39,2	640 - 660	-	0,1 - 0,7
1500	32,2 - 34,2	640 - 660	-	0,4 - 1,2



- SETTING SIDE CONNECTING LEVER
  - 1. Clamp control lever in idle position.
  - 2. Set rod (1) in such a way that the dimension for the pin equals 5.8 0.2 mm (between the side connecting lever and the angle bracket). Then tighten lock nut.

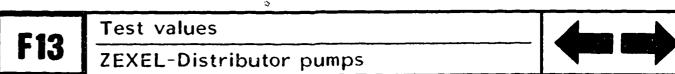


## SETTING POTENTIOMETER

Setting conditions			Prescribed value	
Control lever position	Pump speed (1/min)	Injection of (cm <sup>3</sup> /1000 strokes)	Setting value for output voltage (V)	Remarks
Test				Setting point
Idle			1.6 ± 0.03	Setting point
Maximum speed			$8.43 \pm 0.7$	Test point

(Input voltage 10V)

Fig	_	33
1 19	•	"



- 1. Setting the timing device stroke
  - (1) Calculate the timing device stroke (fig. 35) according to the ambient temperature during adjustment.
  - (2) Set stroke with the timing device stroke-adjustment screw (1), so that it agrees with the calculation (see below).
- 2. Setting W raised idling
  - (1) Adjust the adjustment screw (2) until there is a distance of  $12.3 \pm 0.5$  mm between the control lever and the idle stop screw.
- 3. Setting the control lever angle
  - (1) Calculate the control lever angle (2 dimension) as shown in fig. 35, according to the air temperature during adjustment.
  - (2) Adjust the control lever angle (2 dimension) with adjustment screw (3).

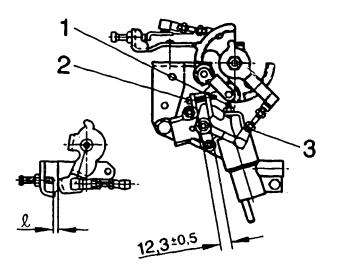


Fig. 34

Fig. 35

a = air temperature (°C)

b = timing device travel (TA) mm

c = gap dimension of control lever/idle-stop screw (1)

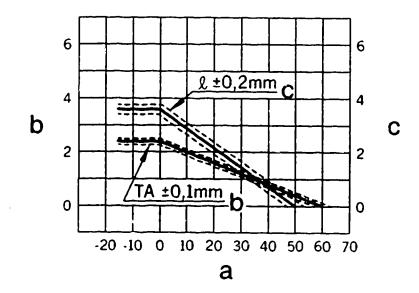
## Calculation formula (Fig. 35)

Timing device travel:

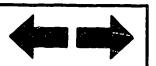
$$TA = -0.04 t + 1.6 (t \ge 0^{\circ}C)$$

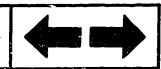
Control lever angle:

$$l = -0.072 t + 3.6 (t \ge 0^{\circ}C)$$









Test oil: ISO 4113 od SAE J967d

ZEXEL - Test values

Distributor pumps

Engine: C223

BOSCH no. 9 460 610 274 DKKC no. 104749-1141 Date: 15.4.1988 (0) Company: ISUZU

894241 6833

No:

Injection pump no. 104649-1151 (N

(NP-VE4/9F2175LNP72)

Prestroke setting: - mm		holder combination: 1 688 901	000 Test pressure	line: 1 680 750 017
1. Setting values	Speed min-1	Setting values	Charge - air  pressure - bar (mmHg)	Difference (cc)
1-1  Timing device travel	1500	3,8 - 4,2 (mm)		
1-2   Feed pump pressure	1500	5,2 - 5,6 (kg/cm <sup>2</sup>		ł
1-3 Full load delivery without charge-	Ì	, , , , , , , , , , , , , , , , , , ,		
air pressure	1500	40,1 - 41,1 (cc/1000 strokes)		3, 0
Full load delivery with charge-air		, , , , , , , , , , , , , , , , , , , ,		, ,
pressure		(cc/1000 strokes)		
1-4 Low-idle speed regulation	350	5,5 - 9,5 (cc/1000 strokes)		2,0
1-5   Start	100	over 63,0 (cc/1000 strokes)		_, ~
1-6   Maximum speed regulation	2175	10,4 - 16,4 (cc/1000 strokes)		
1-7 Load-dependent start of delivery		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		ĺ
1-8				

<u> 2. lest value</u>	<u>_S</u>		
2-1 Timing device	N = min-1	1000 1500 2175	1
		1,4-2,6 3,7-4,3 6,1-7,0	
2-2 Feed pump	N = min-1	1000 1500 2175	
	kg/cm <sup>2</sup>	3,8-4,4 5,2-5,6 6,6-7,2	
2-3 Overflow rate	N = min-1	1000	
	cc/10s	52,0 - 95,0	
2-4 Delivery rates			

	cc/10	s 52,0 - 95,0		
2-4 Delivery rates				
Control lever position	Speed min-1	Delivery rate (cc/1000 strokes)	Charge-air pressure  bar (mmHg)	Difference (cc)
End stop .	2550 2440 2175 1500 600	below 6, 0 10, 4 - 16, 4 34, 7 - 38, 7 39, 6 - 41, 6 30, 0 - 34, 0		
Shut-off	350	0		
Idle stop	350 450	5,5 - 9,5 below 3,0		
2-5 Magnet		voltage max. 8 V tage 12 - 14 V		

3. Dim	ensions	
K KF MS LDA	3,2 - 3,4 5,7 - 5,9 1,7 - 1,9	mm
Angle (	of control le	ver
α	21,0 - 29,0	angle
Α	2,8 - 8,0	
β	36,5 - 46,5	angle
В	10,5 - 14,5	
Υ	-	angle
C		<u>mm</u>

Test values

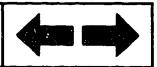
ZEXEL-Distributor pumps



F17

Test values

ZEXEL-Distributor pumps



Test oil: ISO 4113 od SAE J967d

ZEXEL - Test values

Distributor pumps Engine: LD28 1/4 <u>BOSCH no. 9 460 610 292</u> <u>DKKC no. 104769-2026</u> <u>Date: 15.4.1988 (0</u> <u>Company: NISSAN</u>

Injection pump no. 104669-2026 (N

(NP-VE6/9F2500RNP21)

No: 16700 V5710

<u>estroke setting: - mm</u> . Setting values	Speed	<u>zle holder combination: 1 688 901</u>   Setting values		<u>line: 1 680 750 01</u> Difference
-1  Timing device travel	min-1		<pre>pressure - bar (mmHg)</pre>	(cc)
	900	T=2,0-2,6 (mm)	1	
-2 Feed pump pressure	900	$3,5-4,1 \text{ (kg/cm}^2$		
-3  Full load delivery without charge-		,g		
air pressure	900	29,0 - 30,0 (cc/1000 strokes)	ì	2 6
Full load delivery with charge-air		23,0 30,0 (CC/1000 STrokes)	<u>}</u>	2,5
· · · · · · · · · · · · · · · · · · ·			<b>i</b>	
pressure		(cc/1000 strokes)		
-4 Low-idle speed regulation	350	6,3 - 9,3 (cc/1000 strokes)		
-5  Start	100	40,8 - 48,8 (cc/1000 strokes)		
-6   Maximum speed regulation	2600	15,5 - 21,5 (cc/1000 strokes)		
-7 Load-dependent start of delivery				
-8	900	T-0, 2-0, 8  (mm)		
<u>-or</u> .Test values		(0.8 - 10.0  cc/1000  strokes)		

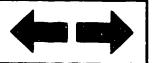
2-1 Timing device	N = min-1	900 1200 2300
	mm	1,9-2,7 3,5-4,7 8,1-9,0
2-2 Feed pump	N = min-1	900 1800 2500
	kg/cm <sup>2</sup>	3,4-4,2 5,5-6,3 7,2-8,0
2-3 Overflow rate	N = min-1	900
	cc/i0s	43,0 - 87,0
2-4 Nelivery rates		

L 5 OVERTION TALE	1 17	=	900			
		cc/i0s	43,0 - 87	7. 0		
2-4 Delivery rates					<del></del>	
Control lever position	Speed   min-1	Delivery (cc/1000		Charge-air bar (mmHg)		Difference
End stop	900 600 2300 2600 2800	28,5 - 27,0 - 28,8 - 15,0 - below	30,5 31,0 32,8 22,0	Dai (ililling)		(cc)
Shut-off	350	0	·			
Idle stop	350 500	5, 8 - below	9, 8 4, 0	<u></u>	· · · · · · · · · · · · · · · · · · ·	2,0
Part load	900	2,1 -				
2-5 Magnet		voltage max oltage V	(. 12 V	<b></b>		

3. Dim	ensions	
K KF MS LDA	3,2 - 3,4 6,54 - 6,74 1,7 - 1,9	mm
Angle o	of control le	ver
α	21,0 - 29,0	
_A	2,5 - 8,0	mm
β	39,0 - 49,0	angle
В	11,0 - 16,0	mm
Y C	10,5 - 11,5	angle
_C	6,7-7,3	mm

Test values

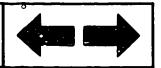
ZEXEL-Distributor pumps



F19

Test values

ZEXEL-Distributor pumps

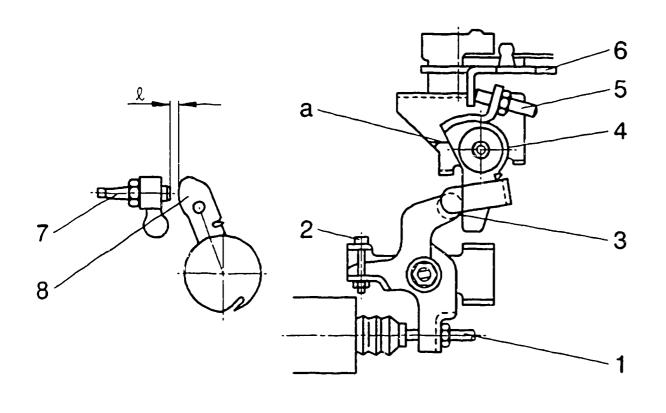


\*\*Setting the stop lever starting delivery\*\*

Set the above so that the starting injection delivery lies within the specified range (Page 1/4).

Tighten the adjustment screw for the starting delivery of the stop lever.

	Setting the	W-CSD	(KSB) test	point
	Water temp. °C	U/min	mm	Base
Timing	50		0	
device stroke	+0.5°		$0.55 \pm 0.2$	Base
	-10		1.65	
	Water temp. °C	U/min	Degree	Base
F.I.C.D.	50		0	
lever angle	+0.5° 20 -		+ 0.5° 2-	Base
	-10		(6)	



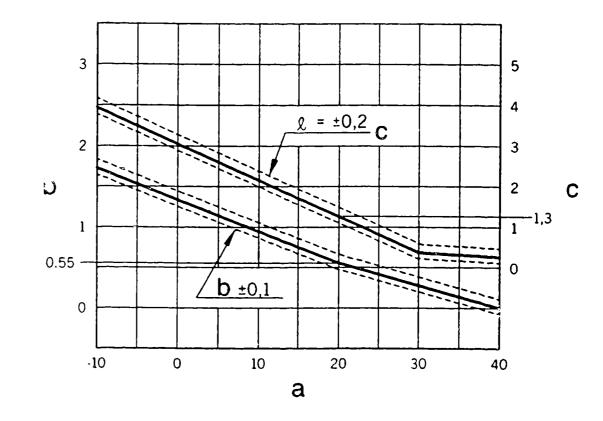


Fig. 36

Fig. 37

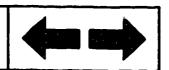
Fig. 38 104769-2026 3/4

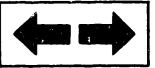
a = Testing of standard line is not necessary

- a = temperature (°C)
- b = timing device travel (mm)
- c = measurement: 1 mm
   (tolerance between control
   lever and idle stop screw)

- SETTING THE W-CSD (KSB)
- 1. Setting the timing device travel (see fig. 38)

Set travel of timing device with the screw (1) in such a way that the timing device lift conforms to the values contained in the diagram (fig. 38).





2. Setting the intermediate lever position (see figs. 36 and 37)

Insert the thickness gauge  $\ell=1.3\pm0.05$  mm between the idle adjustment screw (7) and the control lever (6). When the upper edge of the intermediate lever roller (4) is in the position where the upper edge of the angle (8) is located, temporarily tighten the screw (5) so that it touches the control lever (6). Then turn the screw clockwise a half or a full rotation. Turn back to its previous position, and then tighten. (During this process, the intermediate lever moves clockwise across the horizontal position by 1° to 3°)

3. Setting the W-CSD (KSB) lever (see figs. 36 and 37)

Insert the thickness gauge  $\ell = \pm 0.05$  mm between the idle adjustment screw (7) and the control lever (6), as in the diagram (fig. 38), and tighten the screw (2) in the spot where the roller of the W-CSD lever (3) touches the intermediate lever (4). (During insertion, the temperature of the wax should remain below 30°C)

Note: When inserting the thickness gauge between levers (3) and (4), using the screw (2), leave a big enough gap so that no pressure is exerted on the lever.

# Calculation formula (Fig. 37)

Timing device travel:

$$-10 \le t \le 20$$
  $TA = -0.0367 t + 1.284$   
 $20 \le t \le 40$   $TA = -0.0275 t + 1.1$ 

Tolerance between control lever and idle stop screw:

$$-10 \le t \le 20$$
  $\ell = -0.0628 t + 2.1555$   
 $20 \le t \le 30$   $\ell = -0.0507 t + 1.9142$   
 $30 \le t \le 50$   $\ell = -0.0196 t + 0.9809$ 

